THE BUILDER

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CONDITIONS AFFECTING RURAL DEVELOPMENT—THEIR EXCESSES AND SHORTCOMINGS.

BEFORE the days of building by-laws and regulations many conditions affecting building were nevertheless regarded as essential which to-day have ceased unfortunately to be so. Modern hygiene and domestic science have, on the other hand, laid down many new conditions which are more strictly essential; but whereas the old essentials generally conduced to harmony with surroundings and picturesqueness, the new ones frequently detract from both these qualities.

In Georgian days the Squire when building cottages used local materials and plenty of them—thick stone walls and stone slabs on the roof and floors, and oak roofs and joinery. To-day in their place we get thin brick or concrete walls, spruce floors, and joinery and roofs covered with such inharmonious materials as blue slates of even size and hard terra-cotta like tiles or composition slabs, and even sheet iron or zinc.

Labour, which was formerly the cheapest commodity of all, is now the dearest, and every change is towards labour-saving. The demand also for more accommodation on a large scale leads to the strictest economy in building and a constant lowering of the standard and reduction in what is called for as really essential.

This tendency manifested itself so badly that power was given under the Public Health Acts to draw up by-laws as to streets and buildings, and in 1877 a model set was issued for urban districts. When in 1890 rural authorities were given the same power they adopted the same model, but in 1901, after some agitation, a new code applicable to rural conditions was issued.

So conservative and slow to move, however, are our Rural District Councils that we find from a return made in 1905 that out of a total number of 595 Councils, 257 of them still worked under the urban code, while 210 had no by-laws at all.

The whole question has come prominently before the public in connection with the problem of building labourers' cottages at such a price that they could be let at a rent which present wages enable that class to pay.

The first defiant note came from the late Mr. Justice Grantham, who in order to break down the obstacles in the way of development of his estate threatened to break the laws which as judge he was bound to administer. Since then a Bill was promoted in the House of Lords by the Building By-laws Reform Association and passed without opposition, but was dropped owing to disagreement with representatives of the Councils. The Local Government Board supported the Bill, and has since endeavoured to persuade the Councils to make their by-laws more elastic, and has circularised them to the effect that they should not allow their requirements to offer any impediment to the erection of cottages, and calls attention to an intermediate code suitable for rural areas becoming urban. This exempts small buildings altogether provided they are sufficiently isolated.

One grave objection to the present procedure is that, if there be any doubt as to whether a certain type of construction is in accordance with the by-laws, the only test is to erect the building and risk its condemnation and an order to pull down. This often leads to great injustice and to avoid that the offences are sometimes condoned, with the result that when a genuine prosecution appears necessary the authorities fear to move on account of prior laxity. (*Vide* Chelmsford R.D.C. *v.* Arnold Mitchell.)

But there is now a most useful remedy for really bad cases of housing prevention, which is contained in the Housing and Town Planning Act, 1909, and consists in the power given to the Local Government Board, in cases where it can be shown that the building of cottages is unreasonably impeded by the local by-laws, to have them revoked or revised.

The position is, nevertheless, still full of difficulty owing to the want of guidance and the power of officials trained to repression. There are some who believe in entire freedom and liberty to do whatever any one may wish. Of such we believe are the members of the British Constitution Association, whose Chairman, Sir William Chance, has just published a little book on the subject. It contains the draft of the Bill which never became law, but which its promoters still think, if we must have by-laws, should be passed. Whatever may be said as to the exemption of buildings in rural districts other than those intended for human habitation, there is little doubt that for those buildings control is necessary, as it affects the homes of the people upon which, as our discerning Sovereign has said, the future of the nation depends. Conditions are of first importance, and it is widely felt that if we had had these rules a century ago we should not now be fighting phthisis all over the country.

There is, however, a strong movement in favour of exemption for other classes of buildings, and we find in the Report of the cost of school buildings, published in 1911, that one of the members of the Departmental Committee, Mr. N. T. Kershaw, C.B., Assistant Secretary to the Local Government Board, added a special note to the Report in which he stated the main principles which dictate the exemption of buildings from the operation of by-laws, and said that, if applied literally, by-laws which were mostly framed to regulate houses, etc., might operate unreasonably as regards buildings of special character; also that the objects by-laws are intended to secure will be attained no less certainly by other means, such as the requirements of a Government Department or other body. The Board has in a number of cases, therefore, in view of the fact that the plans, etc., must in every case be approved by the Board of Education, approved of a clause exempting the buildings, either generally or in regard to particular matters, and we think it desirable that such exemption should be generally agreed upon.

Other buildings which might be exempted are hospitals, infirmaries, etc., which are already subject to the strict criticism of the Local Government Board; also churches which are built in accordance with the requirements of the Ecclesiastical Commissioners. Asylums and prisons are already specially exempted by the code, and there would then only remain very few buildings except houses and commercial premises.

We have closely examined the differences between the existing rural code and that proposed by the British Constitution Association, and we are bound to say that, with the exception of those dealing with open spaces, they appear to us relatively unimportant, and they indicate that where the rural code is in existence very little, if any, hardships are inflicted upon owners.

But in the districts where the urban code remains we think some steps should be taken to compel the authorities to substitute either the rural or the intermediate code. We may anticipate some special changes with regard to streets and

roads from the new Departmental Committee appointed by the Local Government Board. The constitution of the Committee leads us to expect a common-sense treatment of these matters in the future.

We hope at the same time that some attention may be given to that side of the question which at present escapes notice altogether. We refer to the fact that under existing conditions it is possible for any individual to besmirch the face of the country with almost any monstrosity that he may conceive, and to erect it on the highest hill-top or even in immediate conjunction with buildings of historic or architectural interest; also to erect factories, gasometers, lighting and power stations, filter tanks, tan pits, laundries, garages, etc., built of hideous materials, to unlimited heights, with tall chimneys, etc., all in the true Philistine manner, in such positions that whole districts may be rendered unsightly and ragged by them.

Stability, sanitation, and fire prevention are most insistent things, but so also are the preservation of the natural beauty for which England is so famous, and the prevention of Eden-like developments and squalid muddles.

The positions of such buildings are a question of control over the use of the land. The only control possible is under the Town Planning Act, but as this is never likely to be put in force in rural districts some other device must be found.

In the public interest why cannot those who erect ugly masses on a landscape be compelled to plant trees around them; also to keep such buildings off the skyline and at a fixed distance from residences; also to prohibit the use of corrugated-iron in certain places, to insist on concrete walls being rough cast, to restrict heights in relation to adjoining buildings, to make gas companies store their gas underground, to eliminate the tall chimney altogether by scientific smoke consumption in special chambers at ground level, and so forth?

These and similar restrictions would provide a check upon the existing desecration of the countryside, without which the by-laws are comparatively wasted.

It should be remembered also that with all these—and even with well-designed buildings everywhere — neglect by the occupiers, untidiness, and dirt will make it labour in vain. We fear the habits of the people are at fault, and no influences are at work unfortunately to improve them.

Students of social conditions, however, declare that the "stye makes the pig and not the pig the stye," and certainly squalid environment produces squalid people. The hope, therefore, lies in the persistent improvement of conditions among which we think those concerning the general treatment and arrangement of our villages are quite as important as those concerning sanitation, etc.

NOTES.

A Threatened Beauty Spot. It seems a pity that the beauty of Waterford Ghyll, associated with Wordsworth's "White Doe of Rylstone," is to be endangered by the erection of a smallpox hospital by the Skipton Rural District Council on a site at Sandy Beck Bar. Not that those are right who seem to imagine that any building must necessarily disfigure a site of great natural beauty. On the contrary, if the building is suitable to the site and well designed it should add to the charm of the scene. Nor is there any reason why a smallpox hospital should not be in itself a thing of beauty. But it must be confessed that the chances are that it will not, and, even if it were, it does not seem to be exactly the building most suitable to the situation; and apart from appearance there is also the question of sentiment. The erection of isolation hospitals is always a matter of difficulty, and it is possible to sympathise with the Skipton Rural District Council in the difficulties they appear to have encountered, and with their natural desire to make an end of a long-drawn-out and troublesome affair. But all the same it is to be regretted that the Council could not see their way to accede to the petitions and protests against the location of the building.

A Great Irrigation Scheme. The aqueducts of ancient Rome will shortly be dwarfed into comparative insignificance by the construction of the modern Italian aqueduct of Pugliese, designed to irrigate the three arid provinces of Puglia on the Adriatic coast. This important irrigation scheme has now been under construction for fifteen years, and has already cost £6,000,000. It will serve a population of two and a half millions and water the holdings of 84,000 landowners. It involves diverting the water of the River Sele, now flowing into the Tyrrhenian Sea, and carrying it through the main range of the Apennines to the eastern coast. The aqueduct begins at Caposele 1,300 ft. above sea level, and runs for 150 miles, sixty of which are cut through rock, to Venosa, where it branches into three main channels serving Bari, Foggia, and Lecce, respectively, and having a total length of 1,000 miles. One hundred and fifty-two reservoirs have a capacity of 150,000 cubic metres each, and the pipes for distribution to the town and villages run to some 500 miles in length. The completion of the tunnel through the Eastern Apennines at Groce di Monaco removes the last engineering obstacle to the completion of the aqueduct.

The Floating Hotel. The arrival in English waters of the huge German liner, the *Vaterland*, reminds us of the extent to which the old idea of a ship has given place to that of a floating hotel, and how far the arrangements suitable to the one have been replaced by arrangements suitable to the other. The outstanding feature, we are told, of this latest and most luxurious example is the suppression of the funnels, which have hitherto occupied so much space between decks, in order to permit of planning on "first-class hotel lines." The skill and ingenuity displayed in carrying the smoke in shafts on either side of the ship so as to make room for the large central halls so characteristic of modern hotels is no doubt worthy of all praise. It would be interesting, however, to know the real opinion of naval architects on this modification of what appears to be the most simple and efficient way of providing for a characteristic structural necessity to make room for features which are not characteristic or necessary to a floating and moving structure. If the position were reversed, and essential and characteristic features of hotel construction had to stand aside to permit of planning on first-class ship lines, there would be not much doubt as to the architect's opinion. He would be inclined to think that the interior of an hotel should look like an hotel, and not like a ship. If the principles which govern the designing of ships are the same as those which govern the designing of buildings, naval architects must view with some misgiving this modern tendency to make the interior of a liner look like anything but what it is—this attempt to deceive the passenger into the belief that he is safely and comfortably ashore by surrounding him with familiar features reminiscent of houses and hotels. While those who cater for the travelling public continue to believe, rightly or wrongly, that this suggestion of deception is just what their customers require—that the modern traveller dislikes change of environment and distrusts the sea, and no longer enjoys adventure flavoured with a suggestion of danger—we are not likely to get arrangements and decorations in our modern liners which are characteristic of moving structure and which emphasise the difference between life afloat and life ashore. Judging from the "two complete self-contained flats with verandahs" of the *Vaterland*, those adventurous souls who would really prefer to go down to the sea in ships that are ships will in the future have to content themselves with floating garden suburbs.

Museum of Moslem Art. The opening by the Heir Apparent to the Turkish Throne of a Museum of Moslem Art in Constantinople is an event of unusual interest, the exact significance of which is not immediately apparent. Museums are perhaps typical of European, not Oriental, civilisation. It is not easy to call to mind any museum founded by Oriental people on their own initiative. In all probability this one is the first. Is it to be taken as a sign of the spread of Western ideas? Those who take the view that art museums are a sign of artistic degeneracy; that a race with a vital art is more concerned with producing than with collecting works of art, more interested in the future than in the past, may be disposed to look upon this museum as a proof that the paralysis which afflicted European arts and crafts during the last century has now attacked Asiatic ones. However this may be, there is no doubt so fine a collection of the best specimens of Turkish and Persian art will be welcomed by all European students.

Beautiful London. There was one subject which we think was hardly sufficiently touched on by Mr. Raffles Davison in his able paper, an abstract of which we give elsewhere, but which we are sure is all-important if our towns in the future are to be places of beauty, and that is, our treatment not only of advertisement placards proper, but of shop-keepers' signs which are permanent advertisements of their wares. We should all be willing to admit that in the modern city, shop-fronts must of necessity be a feature of the principal commercial centres, and that their design is a matter of first importance; but do we stop to think that any design may be destroyed and its scale spoilt by the use of large and unsightly lettering? At present the occupier may do almost as he likes and put up his name in large letters often two-thirds of the size of the windows of a façade and stretching right across them. A well-known firm of chemists habitually do something of the kind, to the entire destruction of any architecture which may be behind. In our opinion, every Council should lay down the size and type of lettering to be adopted over a certain area and, if possible, fix a height for the facia board. And if additional space is to be allowed we consider the shopkeeper should pay for it and obtain a licence before putting up his name or advertisement.

THE LEAD-CASTERS.

BY PAUL WATERHOUSE.

THERE is a stir in the village. For some days past there have been matters to talk of and to watch, for strange workmen have been busy on the roof of the church, stripping from it the old ash-grey lead, whose crumpled outlines and wan surfaces have for many years been a delight in the quiet landscape and a despair to the church-wardens. For lead rejoicing in the sunshine of successive summers forgets itself, creeps expansively from ridge to eaves, and, regardless of its duty, lets the showers through. Plumbers' patches here and there have kept things going since the days when John Fellowes and Robert Oliver, church-wardens in 1750, had their names cast in excellent lettering on the renewed lead which they laid on the south aisle. They, no doubt, were in the same trouble that the wardens are facing to-day, but they probably had no such anxiety as have the present Squire and the present parson for the noble oak of the fifteenth-century roof. That oak must be saved at all costs from rot, and patched lead is never a success.

It seems, then, that the four sturdy giants who have just been added to the number of workmen have something to do with the renewal of the lead. They have brought with them strange implements. They have about them the air of command common to heroes who invade strange places on some definite mission. Carpet-women, I notice, enter our homes with this silent, masterful air; so do medical specialists; probably, also, it is the manner proper to the commanding officers of a successful army in a conquered land.

There has been ceded to the invaders the little barn by the churchyard, whose original use few of the present villagers know. It was built a hundred years ago to accommodate during service-time the carriages and horses of worshippers from a distance. There is nothing of the gentleman's stable about it. Along one of the short ends runs an ordinary cowshed manger, there are a few hooks and rings on the walls; for the rest, whitewashed timbers and an earth floor.

But last evening when I entered it there was no doubt about its new importance. There was in it the breath of impending spectacle. No footlights, no proscenium, no overture could have made it clearer to the imagination that something either dramatic or sacramental was imminent.

The four Anakim were there—no mere workmen at an episode of their work, but four actors, or, if you will, four priests. They stood round a wooden table. It was long—twice the length of a billiard-table half its width. At one end was a trough, at the other was apparatus of mystic uncertainty. Down each side was a wooden substitute for billiard cushions, and where the green cloth should have been a layer of sand. The sand, when I entered, was, to my eyes, apparently smooth and fine. It was not so to the sons of Anak. With a persistence that was ritualistic rather than technical, they pounded, scraped, and harried its surface, using a special two-handled timber for their purpose. To this pummelling followed "ironing" with flat weapons a foot square, first by two magicians, then by one alone—the leader, the captain, singled out as such not by uniform, not by the utterance of commands (for never a word they spoke), but by a certain majesty of carriage and by a supremacy of hand and glance.

There followed a lull of movement. All stood aside in the twilight of the barn, and one, the youngest, it seemed, and the tallest, lit, with all the ceremonial of the sanctuary, four oil lamps that hung from the rugged rafters. The roof, playing its part as if the whole building had waited till this hour for its fulfilment, took up the gleam and became a canopy for magic. The expectancy grew.

Then a voice—the first utterance from the speechless hierarchy—addressed itself to me. Had he said, as I half expected, "*Procul, O! procul este, profani*," I should have fled. But banishment was not the doom. I was to wait, to witness; but would I stand close—close to the door, for fear——

I did. I ground myself against the door jambs and added my contribution to the five-fold silence. Two of the ministrants stood at the mystery end of the table and were already ladling from a cauldron to a trough. The ladles were incredibly heavy, the trough was filling with what looked like silver, and the ladlers were speechless. But their lips moved. Was it silent incantation or merely counting? I know not. At last another pause—a new expectancy which, from its greatness, was clearly the pen-ultimate strain. And then, suddenly, the unexpected. One of the Titans gazed upwards, and leapt—leapt into the air to fling grip and weight on to an uncouth lever improvised among the roof beams. Another Titan added his weight. They bore it down, and with the downbearing came the climax. The trough heaved, and along the length of the billiard-table, from bank to bank, like a tidal wave, flowed a flat gush of glittering ooze. The table was covered, the bottom trough received its tribute of overflow, and with the deftness of conjurers two of the giants scraped the surface of the molten sheet with a gauge that levelled it to a thickness of mathematical certainty.

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Thus was cast a sheet of lead, destined, so it is hoped, to shield, with others, for another hundred years the timbers which the men of the fifteenth century wrought for this very lead's upbearing. For it is the same material that goes back on to the roof; and, for aught we know, John Fellowes and Robert Oliver, in the days of King George, only remodelled the metal that had been there since the reign of Henry VI.

The sheet of which I saw the birth, or rather the resurrection, was one of three-score. There will have been in all sixty dramas, sixty mysteries or ceremonies. Most of them, I am told, get an audience. There are not many folk in the village itself, but people evidently come in from the outlying houses.

You will hear it said that the crafts of England have lost their romance, and you will also hear it suggested that the Church of England should be disestablished and disendowed. If either of these utterances has for one horrible moment seemed to you reasonable, go, I beseech you, to Lower Daggesden at dusk, cross the bridge in the water meadows, and when you get near the church ask anyone you see for the lead-casters' barn. If there is no one about, the men of leisure are in the barn itself. And if unaided you identify the place, enter, I pray you, silently and uncovered. It is a shrine.

BEAUTIFUL LONDON.

WE are glad to give the following abstract of a paper read before the R.I.B.A. on Monday by Mr. Raffles Davison on "Beautiful London." We have been informed that the R.I.B.A., while leaving the matter of abstracts to the discretion of the Editor of the *Journal*, have laid down a rule that these abstracts shall not exceed one-third the length of the paper read, and, as a useful abstract may often be made of one-third the length of most papers, we propose to give our readers abstracts in future unless a smaller amount is insisted on. Mr. Davison said:—

"London is beautiful. Its fine river, its trees, its parks and squares, its vistas, its teeming life, and its wonderful atmosphere fill it with pictures of never-ceasing, of ever-changing, charm. But London is also sordid, depressing, ugly, and smoke-laden. It is full of contrasts, violent, appalling, and picturesque. These contrasts appeal to us all, and I suppose we should none of us feel the same interest in it if perfection reigned. People plead hard for its mud banks. Still, we make beauty our aim, and in the term "beauty" we include everything which goes to the general amenity and well-being of the city. This inclusive aim is the objective of the London Society.

If the approval and support of many notable people were enough to justify its existence to the world, the London Society might feel very well content with itself. But, though the object of its existence—the good of London—is beyond reproof or cavil, the methods by which it seeks to attain that end cannot hope to escape criticism and perhaps even opposition from many who approve its object. And not only is that opposition to be expected from many who have the misfortune to be ignorant on the subject of architecture, but the very elect amongst the architectural profession may possibly think that the ideals which the governing Councils of the London Society set up from time to time are misjudged or worse. The imaginative dreamer or critic who conjures up visions of great fleets of commerce by the mere act of looking upon the mud banks which now line the shore of the Thames is not a likely person to look with favour on the clean and massive walls of granite which form the boundary of a great river boulevard in the ideal vision of a London Society Committee.

It is, of course, unnecessary to make out a case for the necessity of creating and maintaining and constantly developing London as a great and beautiful city, but as to how it is to be done is a matter of very great moment indeed. There are three dominant considerations which affect the result:—(1) The control, (2) the cost, (3) the incentives.

Every new society has to give some account of its aims and show some justification for its existence. But if it were objected that there are already so many societies existing for the amelioration of London, one might reply that it is just the existence of these numerous bodies and of so many varied governing agencies which gives one of the most powerful reasons for the existence of the London Society. This Society hopes to include in its ranks so many of those whose position and capacity enables them to benefit London that it may consist of the very *élite* of our citizens, and that consequently its authority and opinion may not be safely disregarded.

It would seem there should be some simplifying process which might result in the creation of one organic whole with a unity of rates and interests. It may not be at first sight clear to the working man who trudges along the Mile End-road that he shares a community of interest in London with the dainty rich who lounge along our West-end streets; but it could, I suppose, be proved that they both profit by a dignified, beautiful, and spacious city; by fine parks and gorgeous houses, as well as by cheerful, healthful, and well-designed homes and surroundings for the poorer people. And in the East-end the people are paying higher rates.

The more one considers the many subjects in detail which affect the general amenity of London, the more one realises that a general and supreme authoritative control is of vital importance. Amongst the many debatable points to be considered is the attitude of the Government to the capital city of the Empire. We have heard it argued that London is rich enough to carry its own burdens. This some of us cannot subscribe to. We think that such a city as London ought to receive very substantial contributions from the Imperial Exchequer to do things which the overburdened ratepayer ought not to be taxed with.

We should distinguish between the government of London and the control of its growth. A good system of government is not of itself enough, and that is one of the points which I take it the London Society is concerned about.

The gravest indictment we have to bring against London is lack of foresight. To stimulate forethought is perhaps more important than to try to remedy existing evils, many of which seem nearly hopeless.

It is because we find so many varying problems which call for solution that we realise the need for collaboration of thought and effort. You cannot deal with traffic or housing problems unless you consider also the general amenity of the city, and you cannot come to conclusions as to the best sites for certain buildings unless you have an idea on the future development of the city. We have been told that the General Post Office need not have been planted down in the heart of the city, with its many hundreds of clerks, and that it would

View of Whitehall, showing the effect of a Central Avenue of Trees.

(From a drawing by Mr. T. Raffles Davison.)

have been better farther out. If this had been thought of and settled long ago it might have been largely to the public benefit, and also to the large army of workers involved. We have been informed that the Post Office authorities are to girdle the city with an underground Tube which will make future underground railway development difficult. I do not state this as a fact, but it shows how largely one problem affects another, and that only by some far-seeing and statesmanlike control over all can every interest be kept in its right place and its due proportion.

My contention is that at present the prosecution of private business enterprise is transforming London at an alarming rate and in a wholly haphazard way. If a business firm fixes upon a certain site for its works or offices, it is probably doing so in a way which bars future improvements in the locality. If important future improvements are not planned and provided for we have no option but to allow great business premises to be erected where the owners may choose to select. The many important businesses which have been erected on the south side of the Thames add enormously to the difficulty of dealing adequately with that area."

In dealing with the question of railways, Mr. Davison said:—"May we not look forward to, and actively prepare for, a future when all our city railways will have to disappear below ground? Is it conceivable that we shall accept this terrible *status quo* at Charing Cross, Ludgate-hill, Blackfriars and London Bridge, where some of our finest city centres are hopelessly spoiled by these terrible nightmares of railway bridges? Is it worthy of London that we should calmly accept the dirty muddle that we encounter in and about the north end of Charing Cross railway bridge? As the London Society stands for Foresight and Forethought, this is one of the most vital issues which lies before it.

Our attention is periodically called to the beauty of Trafalgar-square. In truth it has possibilities and some qualities even now. But it will never be a fine square so long as the Nelson Column remains—one of the most ridiculous monuments and effigies which has ever memoralised a national hero. We can never give Trafalgar-square a scale which will hold such a thing. Then the commanding site and dignified mass of the National Gallery is dominated by one of the most absurd pepper-box domes in London. When you look at the south side of the square everything is hopeless, though it might have been saved by a fine entrance to the Mall and a fine widening out of the Whitehall thoroughfare. The east and west sides of the square are not parallel, and the buildings which face them are only so good that they might be worse. The fountains are hardly less than ridiculous, and many citizens would be ashamed to have such a display in their private gardens. But a future could be made for Trafalgar-square if that controlling power we are looking for would insist that the new buildings which will take the place of the club on the west and the hotel on the east shall be built parallel to each other, of corresponding height and of at least passable elevation.

These schemes of improvement which more immediately affect the better districts are, of course, only one part of the whole problem—the fact is that such magnificent thoroughfares as Mile End-road have more of the elements of dignity and beauty than our ill-fated new streets like Shaftesbury-avenue, Charing Cross-road, and Northumberland-avenue, in which a proper scale is lost. The beautifying of some of the East-end thoroughfares is practicable enough, if dealt with in the right way. Then, of course, housing schemes, bound up as they are with traffic problems, need a much nicer consideration than they usually have received.

The site for the King Edward Memorial has been the subject of much discussion, and the fact that this discussion has been reopened in a most energetic way within the last two months shows how great is the dissatisfaction as to the site in Waterloo-place. The Memorial Committee have had a very difficult task, and they individually command the highest respect. But since their consideration of the matter a different state of affairs has arisen as to the opening out of the Mall Approach.

Here is a great processional road leading from the City to the Palace. Before the Palace stands the memorial to the greatest Queen who ever lived—and the processional road, the Victoria Memorial, and the newly-fronted Palace, form a memento of the whole Victorian era. The late King Edward carried the burden of royalty through many years of that era. Long before he actually reigned he practically lived the life of a ruling monarch, and his ten years' reign completed and crowned his reign over the hearts of the English people. Such a King surely deserves to have a prominent place in our great memorials, and the most appropriate place would surely be as a frontispiece to the whole—at that point where the Mall entrance links the Palace with the city.

As an illustration of what should be possible by adopting a prearranged scheme of rebuilding certain estates, as leases fall in, in congested neighbourhoods, the Paternoster-square area between Newgate-street and St. Paul's Cathedral has been diagrammatically treated in the accompanying plan. In this Newgate-street and St. Paul's Churchyard are shown as widened each to 80 ft. and a new road of the same width is cut through from the west front of the Cathedral towards Smithfield to take the traffic from that district and from the meat markets to the new St. Paul's Bridge. The traffic from Aldersgate-street and the traffic from Liverpool-street (by way of a new road) would come by the east end of the Cathedral to the same bridge. The bridge in this scheme is shown converging on the dome of the Cathedral, thus we should have the diverging traffic from the bridge merging with the eastern traffic before crossing to the north-east by St. Martin's-le-Grand, and with the west flowing traffic before joining to the north-west in the direction of Smithfield."

Mr. Davison then dealt with the objects of London Bridge, the treatment of the river banks, and summed up by a strong appeal for support for the London Society and its programme.

GARDEN CITIES AND TOWN-PLANNING ASSOCIATION.

The Marquis of Salisbury has been elected President of the Association *vice* Mr. Justice Neville, who has resigned that position by reason of the pressure of his judicial duties. The newly-elected President opened the Town-Planning Exhibition at the Imperial Institute on May 18. The Association will hold their first congress and tour in England in July proceeding firstly to Hampstead on July 11, and thence to Birmingham, Port Sunlight, Liverpool, Letchworth, and Scotland in turn. The tour will be attended by parties from America, Canada, Austria, France, Germany, Italy, Poland, Russia, and Spain.

THE ARCHITECTURAL STAFF OF H.M. OFFICE OF WORKS.

We give the following contribution from a correspondent on account of its interest, but as we are not in possession of the facts we are not in a position to express an opinion as to the accuracy of the statements made. If they are, however, not correct, doubtless some of our readers are in a position to contradict them and will do so.

"THE following brief account of the present organisation of the junior architectural ranks in H.M. Office of Works will be of interest in view of the agitation now going on in your Correspondence columns.

The present crisis has arisen through the arrangements that were made about a year ago for reorganising the staff upon the establishment of a few posts for architectural assistants. The following is a copy of those arrangements (the italics are mine) :—

"1. Draughtsmen, etc., over 35 years of age and who have served for not less than 7 years are to be promoted to established rank on the Principal Architect's certificate that they possess the requisite knowledge and ability.

2. Draughtsmen, etc., who are over 28 are to be promoted to the permanent staff on the Principal Architect's certificate when they shall have attained the age of 35 *if there be vacancies.*

3. Draughtsmen, etc., who are at present under 28 must have served for 7 years and have qualified as assistant architects or be AA.R.I.B.A. before they can be eligible for promotion to the permanent staff.

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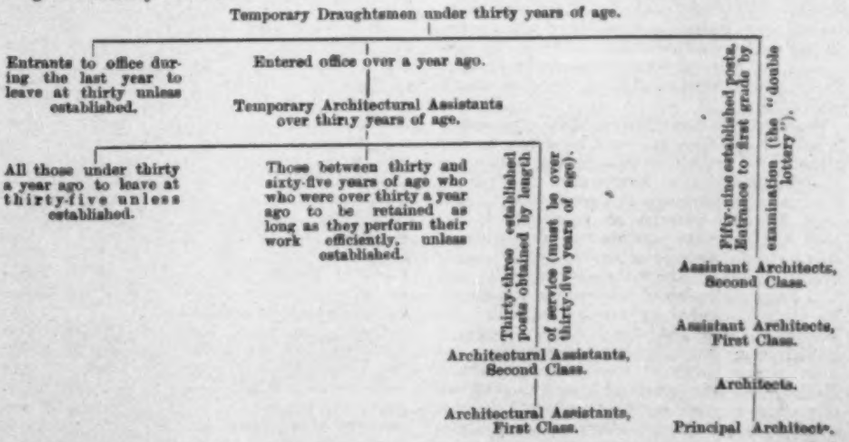
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MR. WILKINSON said, as had been expected, he proposed to discuss the question of drawing, and hoped that the importance of the subject in the profession would be a sufficient excuse for venturing to discuss what might seem such a commonplace topic. In the course of his address he said :—

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That skill in drawing is a very necessary part of an architect's equipment is now fortunately generally admitted, but there are still some who belittle the necessity and quote cases in support of their contention, but even in these cases the great men referred to would have done even better had they been greater masters of draughtsmanship.

The layman, of course, has always laid due stress on the necessity of an architect being able to draw, and the fact that a boy is fond of drawing has more weight in the choice of architecture as a profession than anything else. This is unfortunate in many cases, as the young man finds that, contrary to the ideas of his elders and betters, many other varied attainments have to be mastered, some very exacting and contrary in their nature to free drawing. He finds that there is something more to be done than draw pretty sketches and huge fees, and that the builder, good man, does not do everything else off his own bat, also that there are such things as legal forms and accounts.

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And some drawings may combine in themselves the characteristics of all three groups. Also we must not forget the pleasure which the author obtains from the producing of a drawing, a pleasure entirely the author's own and independent of the result produced or its fate.

First, then, as to the educational value of drawing. That drawing teaches us to see will be acknowledged, that is why we sketch and measure, isn't it? The resulting production and the delectation of our cousins and our aunts is quite a secondary consideration. Now, if we find that we see a great deal more in a building if we sketch it than if we merely look at it, and as after a time this habit no doubt develops our

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View of Whitehall, showing the effect of a Central Avenue of Trees.

(From a drawing by Mr. T. Raffles Davison.)

have been better farther out. If this had been thought of and settled long ago it might have been largely to the public benefit, and also to the large army of workers involved. We have been informed that the Post Office authorities are to girdle the city with an underground Tube which will make future underground railway development difficult. I do not state this as a fact, but it shows how largely one problem affects another, and that only by some far-seeing and statesmanlike control over all can every interest be kept in its right place and its due proportion.

My contention is that at present the prosecution of private business enterprise is transforming London at an alarming rate and in a wholly haphazard way. If a business firm fixes upon a certain site for its works or offices, it is probably doing so in a way which bars future improvements in the locality. If important future improvements are not planned and provided for we have no option but to allow great business premises to be erected where the owners may choose to select. The many important businesses which have been erected on the south side of the Thames add enormously to the difficulty of dealing adequately with that area."

In dealing with the question of railways, Mr. Davison said:—"May we not look forward to, and actively prepare for, a future when all our city railways will have to disappear below ground? Is it conceivable that we shall accept this terrible *statu quo* at Charing Cross, Ludgate-hill, Blackfriars and London Bridge, where some of our finest city centres are hopelessly spoiled by these terrible nightmares of railway bridges? Is it worthy of London that we should calmly accept the dirty muddle that we encounter in and about the north end of Charing Cross railway bridge? As the London Society stands for Foresight and Forethought, this is one of the most vital issues which lies before it.

Our attention is periodically called to the beauty of Trafalgar-square. In truth it has possibilities and some qualities even now. But it will never be a fine square so long as the Nelson Column remains—one of the most ridiculous monuments and effigies which has ever memoralised a national hero. We can never give Trafalgar-square a scale which will hold such a thing. Then the commanding site and dignified mass of the National Gallery is dominated by one of the most absurd pepper-box domes in London. When you look at the south side of the square everything is hopeless, though it might have been saved by a fine entrance to the Mall and a fine widening out of the Whitehall thoroughfare. The east and west sides of the square are not parallel, and the buildings which face them are only so good that they might be worse. The fountains are hardly less than ridiculous, and many citizens would be ashamed to have such a display in their private gardens. But a future could be made for Trafalgar-square if that controlling power we are looking for would insist that the new buildings which will take the place of the club on the west and the hotel on the east shall be built parallel to each other, of corresponding height and of at least passable elevation.

These schemes of improvement which more immediately affect the better districts are, of course, only one part of the whole problem—the fact is that such magnificent thoroughfares as Mile End-road have more of the elements of dignity and beauty than our ill-fated new streets like Shaftesbury-avenue, Charing Cross-road, and Northumberland-avenue, in which a proper scale is lost. The beautifying of some of the East-end thoroughfares is practicable enough, if dealt with in the right way. Then, of course, housing schemes, bound up as they are with traffic problems, need a much nicer consideration than they usually have received.

The site for the King Edward Memorial has been the subject of much discussion, and the fact that this discussion has been reopened in a most energetic way within the last two months shows how great is the dissatisfaction as to the site in Waterloo-place. The Memorial Committee have had a very difficult task, and they individually command the highest respect. But since their consideration of the matter a different state of affairs has arisen as to the opening out of the Mall Approach.

Here is a great processional road leading from the City to the Palace. Before the Palace stands the memorial to the greatest Queen who ever lived—and the processional road, the Victoria Memorial, and the newly-fronted Palace, form a memento of the whole Victorian era. The late King Edward carried the burden of royalty through many years of that era. Long before he actually reigned he practically lived the life of a ruling monarch, and his ten years' reign completed and crowned his reign over the hearts of the English people. Such a King surely deserves to have a prominent place in our great memorials, and the most appropriate place would surely be as a frontispiece to the whole—at that point where the Mall entrance links the Palace with the city.

As an illustration of what should be possible by adopting a prearranged scheme of rebuilding certain estates, as leases fall in, in congested neighbourhoods, the Paternoster-square area between Newgate-street and St. Paul's Cathedral has been diagrammatically treated in the accompanying plan. In this Newgate-street and St. Paul's Churchyard are shown as widened each to 80 ft, and a new road of the same width is cut through from the west front of the Cathedral towards Smithfield to take the traffic from that district and from the meat markets to the new St. Paul's Bridge. The traffic from Aldersgate-street and the traffic from Liverpool-street (by way of a new road) would come by the east end of the Cathedral to the same bridge. The bridge in this scheme is shown converging on the dome of the Cathedral, thus we should have the diverging traffic from the bridge merging with the eastern traffic before crossing to the north-east by St. Martin's-le-Grand, and with the west flowing traffic before joining to the north-west in the direction of Smithfield."

Mr. Davison then dealt with the objects of London Bridge, the treatment of the river banks, and summed up by a strong appeal for support for the London Society and its programme.

GARDEN CITIES AND TOWN-PLANNING ASSOCIATION.

The Marquis of Salisbury has been elected President of the Association *vice* Mr. Justice Neville, who has resigned that position by reason of the pressure of his judicial duties. The newly-elected President opened the Town-Planning Exhibition at the Imperial Institute on May 18. The Association will hold their first congress and tour in England in July proceeding firstly to Hampstead on July 11, and thence to Birmingham, Port Sunlight, Liverpool, Letchworth, and Scotland in turn. The tour will be attended by parties from America, Canada, Austria, France, Germany, Italy, Poland, Russia, and Spain.

THE ARCHITECTURAL STAFF OF H.M. OFFICE OF WORKS.

We give the following contribution from a correspondent on account of its interest, but as we are not in possession of the facts we are not in a position to express an opinion as to the accuracy of the statements made. If they are, however, not correct, doubtless some of our readers are in a position to contradict them and will do so.

"THE following brief account of the present organisation of the junior architectural ranks in H.M. Office of Works will be of interest in view of the agitation now going on in your Correspondence columns.

The present crisis has arisen through the arrangements that were made about a year ago for reorganising the staff upon the establishment of a few posts for architectural assistants. The following is a copy of those arrangements (the italics are mine) :—

"1. Draughtsmen, etc., over 35 years of age and who have served for not less than 7 years are to be promoted to established rank on the Principal Architect's certificate that they possess the requisite knowledge and ability.

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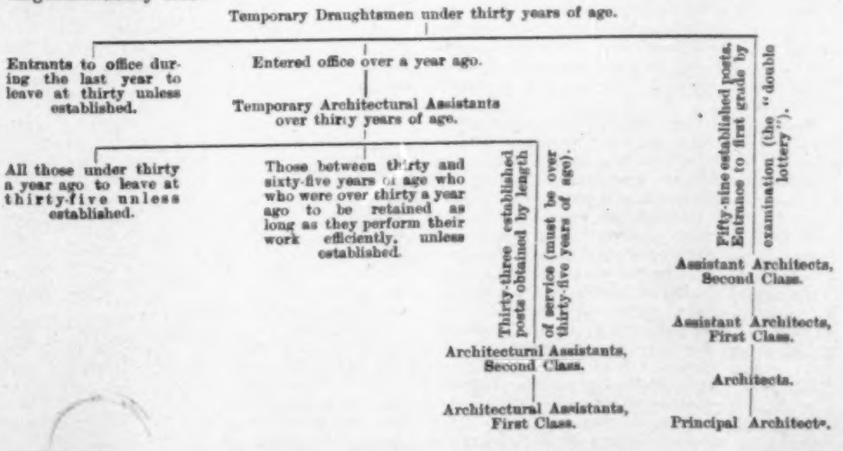
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sense of observation, surely this desirable result would also be produced in the public were they instructed in drawing. And where is the difficulty in this?

Drawing is a much older art than writing, and it might be said that the earliest writing was drawing. But with drawing it seems to be decided that a Heaven-sent genius is necessary—a genius that may be developed certainly, but not produced. It may be claimed that trained mediocrity will produce better results than untrained genius, for, while we always have our geniuses producing great works in all ages, we cannot live on genius alone, but for any general advance must rely on the trained competence of the many, the raising of the average of accomplishment. The chief offenders, the gentlemen who produce those rows and rows of suburban villas (gross abuse of a beautiful term), and impossible shops, will not mend their ways until the public are shocked by these things, as they certainly are not at present, their sense of beauty or even what is reasonable being evidently, shall we charitably say, dormant.

Drawing is not only a means of artistic culture, *i.e.*, a thing desirable in itself, but a means to an end, a helpful instrument in the study of almost any subject dealt with by master and student. Draughtsmanship, like language, is useful for something else than the expression and communication of ideas. It is of great assistance in forming them, just as writing is a great help in sustained thinking. Writing serves not only to define our ideas, but to fix them.

Drawing is an invaluable addition to our intellectual appliances, and it is because drawing may thus be made useful, not because it is the first step in the practice of the fine arts, that it deserves an equal place with writing in schemes of general education.

To quote a passage from James Malton's book on Perspective, which, in addition to showing sound common sense, is pleasantly couched in the leisurely phraseology of a century ago. Malton, who describes himself as "architect and draughtsman," says:—"Drawing, in my opinion, is a vehicle of communication among mankind, as necessary to be somewhat informed in as the art of writing.

The only alternative to drawing as a means of expression of form is, of course, writing, but, except in the case of very simple and commonplace forms, this is apt to be clumsy and seldom perfectly clear. The vivid pictures composed by our great poets and writers, Tennyson's "Palace of Art," for instance, are marvels of literary skill; but does not their success as descriptions depend on familiarity with scenes similar to those referred to? A verbal description of an original form is generally clumsy. The few just lines of Malton would be much more direct.

Photography has affected draughtsmanship in more ways than one, and must not be forgotten. At present limited to the expression of existing forms, it has ousted drawing for purposes of illustration to a great extent. But after the first triumph of popularity it has been realised that a drawing is capable of conveying an amount of feeling and character which is lacking in the camera's work. Although in the representation of lectures and the recording of dimly-lighted and inaccessible detail the photograph is of the utmost value. Again, in reproduction work, process photography has dealt severe blows at the older methods of illustration. The school of men who produced those fine engravings, mezzotints, lithographs, and etchings, showed themselves in their delineation of architecture rare masters of chiaroscuro and composition.

What is it that gives the art of drawing its value? To my mind the production of a drawing means the knowledge of tangible facts. We cannot express a thing until we know what it is. A great draughtsman will be so, not because he commands a skilful technique, has a fine sense for line, colour, and composition, so much as because he knows the forms he deals with. Of lesser lights, some can draw the figure, some animals, some landscapes, some flowers and eatables, and some of us walls with doors and windows in them, but each his special subject only. All are draughtsmen and all can draw, but their failure in other subjects results from lack of knowledge, gained by observation crystallised by the habit of drawing.

When we say that the figure is the most difficult subject to draw, I maintain that we mean that the greatest knowledge is required to delineate the subtle contour of form of the most wonderful of all creations—the human form.

It is extraordinary to notice how some objects are closely studied, while others are denied that attention so necessary to their just expression. If we knew trees and figures of men and animals and motor-cars as we do columns and cornices, these objects might look more like their prototypes than they sometimes do in our perspectives.

I think we should devote more time to the serious study of figure drawing and landscape composition. The latter the setting and the former the adornment and completion of our works.

The second group of drawings, *i.e.*, those instructive to the reader, includes working drawings, record drawings, and restorations (these latter also satisfying the condition for inclusion in Group I. as eminently instructive to the author also).

The mention of working drawings calls for a reference to graphics. This most useful application of drawing to the solution of very practical problems is, of course, appreciated by the engineer and architect. With the diagram errors are less likely and results more obvious than can ever be the case with mere symbols. It may be said that graphics deal with the expression of forces and numbers rather than form, but as in graphics forces and numbers are, as it were, given form so that their functions may be more obvious, I have ventured to refer to the subject. Moreover, the high degree of accuracy required in these drawings is a very useful corrective to the less precise work sometimes produced.

Of drawings in the third group, *i.e.*, those which give pleasure by their intrinsic merits, apart from any question of association, it may be said that they are the result of absolute knowledge assisted by skill in "indication." The most advanced types of these are based on a close study of the effects of forms under varying conditions of lighting, movement, and atmosphere. A lot may be learnt from the study of the works of acknowledged masters, and for contemporary work the Royal Academy, the National Gallery, South Kensington, etc., offer opportunities, while the names of Canaletto, Du Cerceau, Hollar, Piranesi, Turner, Adam, Prout, David Roberts, Nash, Flockhart Richards, Adshead, and Walcot, among others, will recall to you works which in a marked degree intensively possess the power of satisfying and pleasing.

One more great sphere for draughtsmanship is seen in the opportunity it provides for men to show what they could produce if they had the opportunities. I wish we saw more of the fine imaginative (but not impracticable) conceptions by which the old men used to give evidence of their powers and their love of architecture for its own sake. Surely it is in such works as these that a man can show his real worth, sometimes even more than in his executed works, which in this country are too often marred by lay interference and irritating conditions. I suppose our *confrères* in France are saved from this by the innate taste of their fellow-countrymen, while the American client probably has the good sense to set less value on his own opinion than on that of his chosen expert in matters architectural.

Owing to their perishable nature, few mediæval and no earlier drawings exist for our information and study, but I imagine that what we should understand as complete drawings were not made. Their ignorance of perspective is surprising, and the performances in small-scale work up to the Renaissance are almost childish. But that the early builders could draw, and to much purpose, if only full sizes on their templates and setting out platforms, is very evident. With the Renaissance drawing became of paramount importance. The introduction of the new manner, in the north-west of Europe, at any rate, depended almost entirely on graphic representations, the inadequacy of which in many cases led to the perpetration of unlovely compositions, which we know as Elizabethan and Jacobean, and which some men unaccountably feigning extraordinary ignorance would imitate to-day.

From this time to the present day drawing became of more and more importance until to-day all the components of a great building may be in preparation in various places at the same time, and the whole assembled with record speed, the accurate relation of the parts being assured by the services of draughtsmanship.

Granted that drawings are now indispensable, let us see what the effect has been on architecture. Has this effect always been beneficial? Planning as now understood with all its means could not, of course, be effected without small-scale drawing; but has not its effect on elevational design been unfortunate in some cases?

Look at the work produced in response to the demand created by the industrial revolution of last century, and which composes our prosperous but unlovely Midland and Northern cities. With tradition thrown overboard, and chaos let loose by the misguided zeal of literary amateurs, and a public too intent on other matters to take heed, the accumulated heritage of centuries is squandered just as it is becoming enriched with a first-hand knowledge of Greek refinement.

The engineer is parted from the architect, and takes with him the life-giving element of adventure, and with it much precision in draughtsmanship. The draughtsman, born and bred in the narrow artificiality of a new-made town, brought up—I will not say trained—at the drawing-board, produces out of his own inner consciousness (a receptacle which has never been filled) the drawings for the buildings which we know only too well. These are often conveniently devised with excellent workmanship on good material, full of drawing, but innocent of any claims to be considered as architecture.

Again, these men at the boards must have originated the ugly and elaborate ways of carrying out simple details which have become the stock-in-trade of the artisan to-day. If they had only spent a few days in the nearest village and then given a few minutes' verbal instruction or demonstration to the workmen, how much better a lot of this work might have been! Is not the great advance in domestic work largely due to the adoption of this policy, and to the realisation that there are bricks and bricks, and that every locality has its characteristic manner of building?

Once the Renaissance was established it seems that elaborately-detailed drawings became unnecessary, and the workmen could be trusted to produce the vernacular seventeenth and eighteenth century work, of which the charm is now generally admitted, and of which the American Colonists made such good use. But with the nineteenth century, with its chaos in matters artistic, the luckless workman found himself called upon to execute work in the manner of half-a-dozen centuries, in many countries, in as many days. The most precise information in the form of drawings became necessary, and has continued so ever since. Now, it is not that architecture suffered from too much drawing (I think that is impossible), but rather from drawing misapplied—that is, there was, and still is in some quarters, too much drawing in the design and not enough drawing of it. If 80 per cent. of the drawing put into the average commercial, competition, or domestic designs of last century, and more recently had taken the form of the tracing paper's refining furnace, and numerous perspective studies from every point of view, might we not have been spared from the senseless choppings and blockings, trouser panels, and the ubiquitous swag which disfigure so many of these buildings?

Mr. Leslie Wilkinson concluded his paper by discussing the question of the technique of drawings.

COMPETITION NEWS.

It must be understood that the following paragraph is printed as news, and not as an advertisement; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

The list of current Competitions is printed on page 628.

Hythe Concert Hall Competition.

Members of the Society of Architects are requested not to take part in this competition, the conditions of which are not in accordance wth those approved by the Society.

SCHOOL, HIGHGATE-ROAD, N.W.

The Kentish Town Secondary School for Girls in the Highgate-road has just been completed from the designs of Mr. W. E. Riley, F.R.I.B.A., Superintending Architect to the London County Council. The building is on a site adjoining Parliament Hill Fields, and consists of a large assembly hall, classrooms, science-rooms, gymnasium, cookery-rooms, special geography rooms, a fine art room, and a roof playground. The general contractors were Messrs. McLaughlin & Harvey, Ltd., Brecknock-road, N.

LIGHTNING CONDUCTORS.

At a recent meeting of the Junior Institution of Engineers Mr. Frederic H. Taylor, A.M.Inst.E.E., A.M.Inst.M.E., read a paper on "Lightning Conductors and their Tests," of which the following is an abstract:—"The subject of lightning conductors is one which is, or certainly should be, of great interest to everyone, and particularly, I think, to engineers and architects. The latter are justly expected to provide means of protection to the buildings they erect and the former to see that these are properly erected and duly tested, etc.

The invention of the lightning conductor is commonly attributed to Benjamin Franklin, who is said to have erected one upon his own house in Philadelphia in 1752. He is credited with having conducted the experiment of flying a kite during a thunderstorm, and thus seeking to convey the lightning discharge to earth. The twine was connected by means of a large key to a Leyden jar, which became charged and discharged several times in succession. He naturally felt he had drawn the lightning from the cloud. What probably happened was that the storm-cloud had inductively set up a charge on the earth's surface and that what he witnessed was the ready escape to earth of this charge, *viâ* his wet string, etc. We are not told whether he had a policy of insurance against personal accidents or not, but most of us in these days would hardly care to repeat his experiment.

The labours of Franklin were received by the people of his time with very mixed approval. He was ridiculed by some and condemned by others. Ultimately, however, and as with other great inventions, superstition and prejudice became "lived down" and the lightning conductor came to be regarded as a necessity if life and property were to be protected so far as lay within the power of man.

It is frequently supposed by several classes of people who might well be expected to take a more considered view that protection from lightning is of but little consequence in this country. They tell you that we have very few thunderstorms, and then they are only mild ones. Such statements are utterly fallacious and consequently misleading.

The Lightning Research Committee during the three years 1901–1904 were advised of over 500 cases of buildings in Great Britain damaged by lightning, or an average of 166 per annum. I hardly feel such figures are not worthy of our serious consideration.

It is sometimes urged that buildings provided with lightning conductor systems are occasionally struck. This may be so, but what was the condition of the lightning conductor system at the time? And even if in order so far as it went, was it adequate? The answer, which appears to be justified by modern knowledge, is that the system was either in bad condition or inadequate.

Some persons are inclined to suppose that if a lightning conductor is struck and partly fused or destroyed it proves uselessness. It proves the very opposite.

I would like to mention two fallacies which one often hears. One is that the conductors attract the lightning. This is nice of the conductors, and probably therefore the gutters attract the rain.

The other fallacy I would mention is that of supposing that only very tall buildings need protection. Other circumstances than height above ground must be considered if reasonable protection is to be obtained. A building may have two chimney-stacks, a tall one and a shorter one. Where the former has been fitted with a conductor the latter has been known to be struck, and the reason has been definitely ascertained.

I do not propose to deal except very scantily indeed with the purely scientific aspect of a lightning discharge. The generally accepted opinion is that lightning discharges are of two distinct kinds, named by Sir Oliver Lodge the "A" flash and the "B" flash respectively. The "A" flash is simple in character and consists of a discharge between an electrically charged cloud which is approaching the surface of the earth without any intermediate cloud intervening. The path of the "A" flash is more or less prepared by the electrostatic conditions of the case, and it is said to strike pointed conductors in preference to others.

The "B" flash is a disruptive discharge of great suddenness, and arises where another cloud intervenes between the cloud carrying the primary charge and earth, the two clouds acting like a condenser. The Lightning Research Committee of 1905 reported that "when a discharge from the upper cloud takes place into the lower cloud the free charge on the earth side of the lower cloud is suddenly relieved and that the disruptive discharge from this to the earth takes such an erratic course that no series of lightning conductors of the then hitherto recognised type suffice to protect the building."

It should be noticed that flashes of the simple "A" type are subject to what I would call "splashes," or, as some authorities call them, "lateral discharges."

Lightning discharges are sometimes quite silent, and, being so, may pass unobserved. I well remember some overhead electric lightning conductors erected under my supervision in the grounds of a building placed on very high ground on the outskirts of one of our Home Counties. I had lightning arresters attached to these where they entered the premises. Curiously enough during the first summer, although several severe storms occurred, nothing observable happened. During the second summer, however, when everyone agreed that no storms had been noticed, one after another my lightning arresters gave evidence of having received discharges, apparently silent ones.

Lightning is stated by many authorities to act like weak human nature and therefore to select the path of least resistance. But what forms the path of least resistance the lightning alone decides.

Protection against the "A" type of flash is fairly easy, and it is considered that the ordinary system of conductors when properly constructed and maintained is reasonably safe. Discharges of the "B" type involve more complex treatment, and, in the words of the Lightning Research Committee 1901–1905, "absolute protection can only be assured by a complete wirework enclosure—in fact, of the nature of a birdcage." In any case the extent to which a building shall be protected and the cost of such protection usually have to bear a certain relation to the importance and the first cost of the building itself. Unfortunately the lightning conductor work of most buildings is treated with an indifference as dangerous as it is unjustifiable.

Briefly put, any lightning conductor system comprises: (1) The air terminal, consisting of what is called the "elevation rod," the top of which is provided with one, three, four, or even five points; (2) the conductor from the elevation rod to the ground, with branch conductors from other parts of the building or from the metal work of the structure, such as gutters, stack-pipes, metal roofing, etc.; and (3) the earth connection.

The metal most commonly—in fact, almost universally—used is copper, in the form of copper tape from, say, 1½ in. by ¼ in. down to ½ in. by ⅛ in. Iron is electrically efficient, but is more subject to corrosion and not so easily fitted into position. As to the design of the conductor system, this can only be settled when the design of the building, including its chimneys, turrets, gables, ridges, roofing material, etc., are known, and some consideration must also be had for its general situation. For rough guidance, however, a few general first principles may here be given:—

1. Conductors should run in as direct a line to earth as possible. Some persons prefer to keep them a certain distance from the wall.

2. Vertical rods should preferably be connected by horizontal conductors fixed to ridges or other suitable parts.

3. Roof metal work, etc., should be connected to the system.

4. Chimneys should be protected as being specially liable to be struck, due of course to the column of hot gases, which are good conductors, the carbon lining to the chimney in the form of soot, and the mass of metal work at the base in the form of a stove.

5. Any joints in conductors should be both soldered and screwed together.

6. Conductors should be kept as much away from interior gas pipes or electric pipes, etc., as possible.

7. Similar metals should be used throughout, *i.e.*, the holdfasts should be of gunmetal and screws or rivets, etc., of copper.

8. Long runs along ridges, etc., should preferably have more than one elevation rod—say at least one at each end, several short points along a ridge being better than a few tall ones.

The earth connection of any lightning conductor system, however simple that system may be, is of the very utmost importance. It is the connection to earth, and if this be inefficient the whole system may be regarded more as a danger than as a protection. The matter of obtaining a good earth connection is mainly a question of surface contact between the conductor and moist earth. A moderate amount of resistance (ohmic resistance) is not harmful; in fact, may be otherwise. The mere fact of taking the conductor into moist earth, or even into water, does not necessarily form a good earth unless there is a considerable area of contact. The usual method of forming an earth connection is by means of a copper plate. The thickness is not important provided it is sufficient to withstand oxidisation. A plate measuring 30 in. by 30 in. by ⅛ in. would be more efficacious than one 12 in. by 12 in. by ¼ in. The copper tape conductor should be well connected to the plate, preferably riveted as well as soldered and the soldered joint painted over to retard electrolytic action. Many people bury the plate horizontally; personally I always make the interment vertically. The earth connection should always be kept well away from the building and also well away from gas mains.

It is absolutely necessary that the earth connection should be kept fairly moist so as to allow the resistance to remain moderate in value.

It is usual to bury a quantity of broken coke or cinders with the plate, with a view to retaining the moisture. If either material be used it must be thoroughly washed so as to get rid of any sulphur present, which would destroy the copper. There are, of course, cases which sometimes arise where to bury a copper plate in the ground is to invite certain failure. In the neighbourhood of certain factories the soil is found saturated with ammonia (tar or creosoting works, etc.), which is destructive to copper.

To facilitate discharge into the general mass of earth saw-teeth points to the plate are sometimes used. A special type of earthing plate adopted by the London County Council is to the following specification:—"To be of copper, ⅛ S.W.G. tape, riveted and soldered the full length of the plate; joints washed of acid and protected by thick coat of tar. Each plate to have four rows of triangular tongues formed out of the plate itself—two rows of six and two inner rows of five each, so that tips of tongues in adjacent rows point in opposite direction, each tongue being 3 in. long and tapering from 2 in. to a point. Tongues to be bent at right angles and to point upwards when the earth plates are laid in position." The loose earth or wood charcoal to be filled in and well rammed on top of the plate.

The difficulty of keeping the earth connection moist is in most cases a very real one—of course if a pond, lake, or river, can be utilised it is excellent provided the plate is kept free from mechanical injury and that you do not one day find yourself with only the end of the tape left. In order to facilitate the provision of a proper earth terminal the patent tubular earth had been designed by Mr. Killingworth Hedges, M.Inst.C.E., M.Inst.E.E. This mainly consists of three parts; the upper for connecting to the copper tape or cable and also to a rain-water pipe; the lower end, which forms the actual earth and which is fitted with a steel spike for driving into the soil, and a removable cap for marking the position of the earth in the ground.

It not infrequently happens that the earth plate originally installed on a job has failed, and that for various reasons one cannot sink another. In this case a live water main makes an excellent and a lasting earth contact, care being taken, of course, that the connection between the tape and the pipe is properly made. Such connection will, of course, be external to the building.

The inspection and testing of a lightning conductor after it has once been installed is mostly conspicuous by its absence, and this is undoubtedly the cause why accidents from lightning are often reported to have occurred to buildings that have been believed to be protected by conductors. It is not simply a case of "out of sight out of mind." It is open neglect.

The tests which should be made should show the conductor to be continuous from air to earth, and to possess a sufficient lowness of resistance to earth so that it may be considered reasonably safe for conducting away a discharge into the earth."

THE SURVEYORS' INSTITUTION:

PROFESSIONAL EXAMINATIONS, 1914.

THE following candidates have passed the Direct Fellowship Examination :—

H. Daykin, Redditch
A. Ford, Eastbourne
W. H. Hobday, London
J. D. Hunter, London
W. R. S. Speed, Wolverhampton

The following candidates have passed the Final Examination :—

T. Alexander, Liverpool
A. Allen, Somerset
H. Archer, Coventry
H. Arthur, London
D. Ballentine, Dumfriesshire
H. Barker, Thornton Heath
A. Barrett, Leeds
R. Bartram, London
M. Batting, Henley-on-Thames
J. Beal, Yorkshire
M. Benham, Oxford
F. Bennett, Swansea
W. Biggs, London
R. Bigham, Liverpool
E. Bland, Essex
J. Bland, jun., Essex
F. Booker, Nottingham
T. Bower, London
A. Bowes, Sunderland
G. Brewer, London
F. Brewerton, Manchester
R. Brocklehurst, Dorset
H. Bromley, Eastbourne
A. Brown, London
E. Brown, Kent
L. Brown, London
G. Burge, Bristol
E. Butler, Tring
H. Butlin, Plymouth
A. Cayhill, London
E. Canham, London
J. Carnegie, London
A. Carpenter, London
W. Caton, London
S. Chadwick, Herts
D. Chapman, London
R. Charles, Middlesex
A. Cheyne, Durham
F. Clevely, London
W. Clough, Gateshead-on-Tyne
C. Coleman, Sevenoaks
C. Commander, Birmingham
A. Corfield, Preston
H. Cottam, Manchester
A. Coucher, London
G. Culverwell, Bath
E. Currall, Birmingham
W. Cutlack, Kent
E. Davies, Lancs.
H. Davies, Swansea
J. Davies, Glam.
A. Dawson, London
E. Dawson, Manchester
C. Dewhirst, Harrogate
E. Dickin, London
D. Dickson, Bucks
E. Dodds, Herts
W. Donger, Winchester
G. Doyle, Taunton
G. Ellam, Manchester
F. Elmes, Leicester
R. Elphick, London
L. Elwell, Derby
E. Evans, Lancs
S. Ferris, London
A. Flood, London
D. Free, Marlborough
P. Freemantle, Surrey
E. Frost, London
E. Fuller, Grimsby
F. Gammon, Surrey
N. Gasson, Dudley
S. Gasson, Derby
O. Gibbings, Carlisle
F. Gibson, London
G. Gibson, London
W. Gibson, London
G. Giller, Glos.
P. Gold, London
F. Gorse, Stockport
R. Gossling, Newbury
R. Gott, Bradford
H. Green, London
H. Grimwood, Ipswich
T. Hall, Essex
G. Harding, Croydon
A. Hardy, Kirkby Lonsdale
H. Harvey, London
G. Hawker, Bournemouth
A. Haynes, Notts
A. Haynes, London
F. Heaven, Glam.
J. Hemming, Redditch
*L. Hempson, Ipswich
A. Hendy, Nottingham
H. Hepworth, Wakefield
H. Hewlitt, London
R. Hinxman, Winchester
R. Hobson, London
N. Hodgkinson, Surrey
E. Holmes, Sheffield
R. Honey, Kent
L. Hooton, Edinburgh
G. Hopper, London
F. Hosegood, Somerset
H. Howarth, Lancs.
E. Howse, Bristol
L. Hughes, Birmingham
S. Hussey, Kent
S. Isitt, Harrogate
W. Jamieson, Sunderland
C. Jenkins, Glam.
E. Jones, Liverpool
E. Jones, Merioneth
R. Jones, Card.
H. Kenyon, York
H. Killender, Liverpool
W. Kirby, Huntingdonshire
A. Kislingbury, London
E. Lambert, Kent
F. Lane, Hants
F. Langley, London
W. Lawton, Knaresborough
K. Legg, London
E. Leonard, Liverpool
F. Lewis, Leicestershire
W. Lingard, Stockport
C. Lister, Leeds
W. Luce, Plymouth
F. Lyster, Chelmsford
A. McDowall, Essex
G. Mammatt, Birmingham
C. Mann, Middlesex
H. Mann, Middlesex
G. Manton, Staffs.
G. Marner, London
G. Matkin, Sunderland
H. Maxwell, London
A. Medrington, Wigan
C. Melvin, London
T. Miller, Blackburn
A. Mills, Sussex
C. Milnes, Birkenhead
E. Morris, London
W. Morton, Dover
C. Mowbray, Swansea
J. Muirhead, Glos.
F. Mumford, Doncaster
L. Murray, Malvern
W. Naylor, Lancashire
W. Neal, London
T. Neale, Birmingham
W. Needham, Birmingham
P. Newman, London
F. Nicol, London
E. Nixon, Newcastle-on-Tyne
F. Nixon, Beds.
S. Norman, Deal
G. Orton-Smith, Birmingham
H. Osborne, Cardiff
A. Page, Birmingham
E. Page, Kent
J. Paine, Kent
R. Palmer, Swansea
E. Paynter, Devon
R. Pennington, Scarborough
H. Pilley, Dover
R. Poynton, London
M. Prior, Surrey
S. Radburn, London
E. Randall, Guildford
J. Riccomini, Kent
W. Ride, Malvern
C. Righton, Cheshire
H. Roberts, Surrey
T. Robson, Grimsby
E. Roff, London
V. Rogers, London
F. Russell, Derby
L. St. John, York
C. Sanctuary, Dorset
J. Schilling, Devon
G. Searing, Kent
T. Seaton, Manchester
W. Shelley, London
E. Shepherd, Bromley
F. Shiner, Essex
A. Slade, Surrey
A. Smith, London
A. Smith, London
G. Smith, Hants
H. Smith, Northumberland
†H. Smith, London
C. Snell, London
E. Solomons, Nottingham
A. Stanbridge, London
E. Stedman, Surrey
W. Stevens, Yorkshire
W. Stewart, Bournemouth
J. Storey, Oxford
F. Storry, Doncaster
P. Stratton, Wolverhampton
F. Stuart, Darlington
F. Suddards, Skipton
J. Summersell, London
A. Tanner, London
D. Taylor, London
S. Taylor, Manchester
W. Taylor Kenilworth
C. Tebbit, Essex
J. Thayer, Liverpool
A. Thomas, Kent
O. Thomas, Swansea
A. Thomerson, London
J. Tiffen, Carlisle
T. Till, Weston-super-Mare
H. Townley, Kent
W. Veal, Dorset
J. Vint, London
S. Walker, Darlington
I. Walmesley Cotham, Wigan
A. Walton, Nottingham
C. Ward, Devon
F. Ward, jun., Devon
J. Watkins, Swansea
H. Watkinson, Herts
R. Watney, London
C. Watson, London
F. Watson, London
D. Watts, Glam.
M. Webb, London
E. Wheeler, Kent
F. White, London
F. Wigginton, Hertford
S. Wilkins, Worcester
M. Wilks, Bedford
H. Williams, Cardiff
J. Williams, Cardiff
R. Williams, London
G. Willis, Manchester
R. Woodcock, Suffolk
W. Woodcock, Folkestone
J. Woolley, Glos.
J. Woolley, London
C. Worssam, Bedford
G. Wright, Essex
J. Wright, Herts
D. Young, London
S. Youngs, London

Irish Candidates.

P. Calinan, London
W. Martin, Belfast

The following non-students have passed the Intermediate Examination :—

H. Allison, Scarborough
A. Anderson, Hants
G. Anthony, Hereford
B. Appleyard, Coventry
J. Ayling, Brighton
T. Barlass, Carmarthen
P. Batchelor, London
A. Beeton, Southend-on-Sea
W. Benner, Nottingham
C. Bennett, Essex
E. Berry, South Croydon
E. Besent, Salisbury
A. Blanks, London
J. Bleakley, Manchester
F. Blowen, Mon.
A. Bowen, Birmingham
B. Bower, Chester
W. Bowles, Dover
H. Bradley, Doncaster
W. Brewer, London
W. Brimmell, Cornwall
G. Brookes, London
R. Brooksbank, Stoke-on-Trent
A. Brothers, Whitehaven
A. Burch, Weymouth
W. Burnett, London
T. Burnside, Bury St. Edmund's
J. Carter, Nottingham
*R. Chamberlain, Nottingham
A. Chapman, Coventry
H. Chapman, Oxford
J. Chapman, London
A. Chessell, London
H. Church, Harrogate
A. Coates, Keighley
A. Cooley, Lincoln
F. Coombes, Kent
J. Costello, Middlesbrough
E. Coulson, Birmingham
C. Courthope-Munroe, Essex
F. Cox, Glam.
W. Cox, Middlesbrough
F. Cramp, London
T. Cresswell, London
S. Cullington, London
L. Curteis, Sussex
H. Cutmore, London
E. Dartnall, London
J. Davidson, Newcastle-on-Tyne
D. Davies, Card.
F. Davis, London
T. Davis, London
S. Day, London
E. Deacon, New Malden
R. Deakin, Salop
N. Dean, Hereford
J. Dodd, Newcastle-on-Tyne
W. Dow, Surrey
C. Drewett, Nottingham
W. Drover, Southampton
W. Drury, Harrow
G. Dunnage, London
R. Duns, Newcastle-on-Tyne
F. Durkin, West Hartlepool
S. Edwards, London
V. Ellis, Pembrokeshire
T. Exley-Fisher, Yorkshire
H. Fifield, London
G. Fillingham, Stamford
W. Flux, Worcester
H. Foot, Mon.
F. Ford, Sussex
R. Fox, London
H. Gale, Oxford
†R. Gale, Oxford
H. Garbutt, Middlesbrough-on-Tees
H. Gibbs, London
E. Gibson, London
W. Gill, Lancs.
E. Gingell, Surrey
K. Goodenough, Bristol
H. Graham, Cumberland
J. Grant, Somerset
S. Gray, Bolton
F. Green, Birmingham
H. Greenhalgh, Darlington
J. Grierson, Liverpool
D. Griffin, Liverpool
H. Griffith, Breconshire
A. Griffiths, Walsall
C. Griffiths, Swansea
E. Griffiths, Swansea
F. Hadden, London
W. Hadley, Pontardawe
A. Hall, Huddersfield
G. Hannam, London
H. Harding, Middlesex
B. Hardman, Middlesbrough
C. Harrison, London
H. Haskell, Lancashire
J. Haugh, S. Wales
H. Haycock, Leicester
H. Haynes, London
G. Headley, Hertford
G. Hearn, London
L. Heath, Manchester
H. Heeley, London
J. Hewetson, Yorks
C. Hewson, Sussex
H. Hird, Halifax
B. Hiscock, Mon.
C. Hodder, Surrey
H. Hopkins, London
P. Howard, Glam.
T. Howard, Herts
A. Hughes, Berks
G. Hughes, Walsall
G. Ingham, Chichester
F. Ivey, Bristol
H. Jackson, Sheffield
W. Jackson, Hull
S. Jalland, York
D. James, London
F. James, London
R. James, Birkenhead
R. Jenkins, Southampton
R. Jenkins, Swansea
W. Jenkins, Glam.
S. Jones, Swansea
W. Jones, Cardiganshire
‡L. Jukes, Southampton
D. Kendon, London
A. Kirk, London
B. Lake, Herts
W. Lawton, Macclesfield
B. Legg, Reading
W. Lewis, Birmingham
F. Lloyd, London
G. Lockwood, Hants
M. Logan, London
J. Low, Cambridge
H. Lyne, Market Harborough
B. McFie, Oxford
F. Mahomed, Bury St. Edmund's
J. Mahony, Norwich
R. Mallett, London
J. Manfield, High Wycombe
A. Marns, London
L. Marsh, London
A. Marshall, Huddersfield
C. Mathew, London
J. Maynard, Sussex
A. Middleton, Birmingham
H. Middleton, London
J. Middleton, Blackpool
T. Midgley, Keighley
V. Millard, London
W. Mitchell, London
P. Morgan, Glam.
D. Morter, Surrey
S. Moss, Northampton
J. Muirhead, Wakefield
C. Mullock, Dudley
A. Mumford, Essex
G. Newbigin, Yorkshire
C. Newman, Frome
J. Newman, Wigan
P. O'Connell, London
L. Owen, Kilgeirau
A. Page, Essex
A. Page, London
M. Pagington, Wilts
R. Parker, N. Wales
T. Parkes, Birmingham
J. Parkin, Northampton
P. Payne, Hants
R. Pearce, Wilts
J. Peard, Taunton
H. Pegg, Herts
F. Perkins, Lancs
H. Pettett, London
G. Phillips, Hereford
J. Pickering, Kent
M. Pitman, Northumberland
E. Pittam, Middlesex
J. Pointer, Northampton
E. Pollington, Fife
B. Priest, Herts
E. Putt, Bridgwater
E. Ralph, Kent
G. Ramsden, Leeds
D. Rees, Staffs.
H. Richardson, London
B. Roderick, S. Wales
W. Rossiter, London
C. Rowell, Newcastle-on-Tyne
J. Sandow, Plymouth
E. Savill, Surrey
*A. Schofield, York
G. Shaw, Bradford
T. Shearer, Hastings
F. Sheldon, Cheshire
A. Shepherd, Kent
E. Sherlock, Manchester
F. Smith, London
R. Smith, Kent
A. Soar, Surrey
F. Stearn, Grimsby
J. Stephenson, Northumberland
H. Stevens, Somerset
A. Stickland, Essex
P. Strang, London
W. Strickland, Berkshire
J. Swindell, London
F. Taylor, Thames Ditton
G. Taylor, Cambridge
H. Taylor, Derbyshire
H. Ternan, Kent
A. Thomas, Cardiff
H. Thomas, Cardiff
W. Thomas, S. Wales
T. Thompson, Leeds
W. Thorpe, London
D. Tiddy, Exeter
S. Titchmarsh, London
R. Tivy, Bristol
G. Tomlinson, Birmingham
W. Trinder, Middlesex
W. Wade, Leeds
T. Waight, London
G. Waite, Darlington
E. Wales, Knaresborough
E. Walker, King's Lynn
I. Walker, Cumberland
A. Ward, Sheffield
H. Ward, Cheshire
C. Wastell, Swansea
A. Watson, Yorks
A. Watson, Newcastle-on-Tyne
S. Watt, London
J. Welch, Cheshire
W. Weller, Winchester
E. Welsby, Liverpool
J. Whalley, Bradford
C. Wilkinson, Essex
G. Williams, Breconshire
W. Williams, Wrexham
R. Wilson, Yorks
W. Withyman, Lincoln
T. Worth, Cumberland
A. Wright, Batley
S. Wright, Great Yarmouth
T. Wynne, Flintshire

Irish Candidates.

R. McLaughlin, Waterford
C. Pemberton, Dublin
H. Wilson, Belfast

The following student candidates have passed the Intermediate Examination :—

G. Back, London
F. Barber, Cumberland
H. Barker, London
H. Bearman, Herts
R. Belam, Liverpool
A. Belcher, London
M. Botting, Sussex
J. Brigg, Luton
A. Brooks, Birmingham
A. Burnett, Hampshire
J. Challice, Exeter
†O. Chapman, London
H. Coales, Leeds
R. Cork, Kingston-on-Thames
R. Crouch, Kenilworth
R. Davis, London
J. Elliman, Epsom
C. Else, Derby
J. Faulkner, London
W. Fergusson, London
C. Fifield, Essex
H. Flower, Bath
H. Forrester, Surrey
C. Fox, Halifax
A. Fraser, Penrith
F. Gill, Kent
A. Glasse, Essex
F. Goldsmith, Hants
G. Graham, London
S. Green, London
E. Gregson, Lancs.
F. Gregson, Herne Bay
E. Grice, Middlesex
‡E. Harrison, London
W. Harwood, Notts
G. Hebden, Goole
M. Hedley, Cumberland
S. Hellier, Hants
L. Henshaw, Stockport
W. Hewett, Surrey
C. Hill, Chester
S. Hill, Enfield
N. Hillary, Hants
E. Hughes, Liverpool, E.
J. Hughes, Maidstone
R. Hutson, Surrey
B. Ireland, Yorkshire
R. Jeffery, Dorset
D. Kemp, London
W. Knowles, London
F. Leatherdale, Sussex
S. McLearon, Ipswich
A. Martin, Nottingham
R. Menzies, Surrey
G. Millyard, Bromyard
H. Mole, Surrey
W. Moody, Eastbourne
W. Morgan, Glos.
E. Morris, Birmingham
J. Ogden, Glam.
H. Owen, London
A. Parker, Suffolk
H. Parker, Surrey
G. Parry, Anglesey
F. Pascoe, London
A. Paull, Middlesex
R. Payne, Watford
F. Pegler, London
E. Purry, London
E. Richardson, London
H. Ritchie, Lincs
G. Robinson, Lancashire
J. Robinson, Warwickshire
R. Rose, Bucks
R. Samuel, S. Wales
G. Scriven, Gravesend
L. Shaw, Batley
E. Silcock, Leeds
R. Slade, London
J. Slatter, Glos
A. Smith, Cumberland
R. Smith, Surrey
H. Southam, Northants
R. Squire, London
V. Storey, Kent
H. Teverson, Cambs.
C. Thurgood, Herts
W. Turner, Shepton Mallet
H. Williams, Birkenhead
G. Yonge, Wiltshire

Irish Candidate.

J. Craig, Belfast.

The winner of the Penfold Gold Medal in the Final Examination is Mr. Hubert John Smith, of 45, Coleraine-road, Blackheath, S.E.

* Crawter Prize. † Galsworthy Prize.

* Special prize for constructive and working drawings. † Beadel Prize. ‡ Special prize for quantities.

* Driver Prize and Penfold Silver Medal. † Institution prize. ‡ Special prize.

ARCHITECTURE AND THE STAGE.

"GARSIDE'S CAREER," given by the Horniman Company at the Coronet Theatre, is an interesting comedy giving with much realism the experiences of a Labour Member of Parliament, whose personal ambitions dominate his devotion to principles, and who is justly punished by the withdrawal of the support on which his fortunes rested. Mr. Milton Rosmer played the title *rôle* with much talent, giving full expression to the unconquerable egotism and vanity which dominated and destroyed Garside's chances.

Gladys Mottram, the Mayor's daughter—a girl who wishes to escape from provincial life, almost, as she puts it, "by any means," and is therefore almost ready to take Garside at his own valuation—is well and subtly played by Miss Beatrice Terry; while Mr. Horace Braham takes the part of her brother, and gives a much-wanted humorous touch to a serious play. The remaining characters—the three labour delegates, the school-mistress, and heroine, and Garside's mother—are admirable. The scenes, which represent the working man's home, the Mayor's house, and Garside's rooms in the Temple, are appropriate, and the whole piece brings with it a strong flavour of the more strenuous life of the North.

At the St. James's Theatre the revival of "The Ideal Husband" will, we think, be one of the successes of the season. The play, if not entirely lifelike, and somewhat overburdened with the aristocracy, is full of epigrams, and the parts are well allotted among a very strong cast. Sir George Alexander plays the part of Viscount Goring sympathetically and with great humour; his father, the Earl of Caversham, is very cleverly rendered by Mr. Alfred Bishop, while Mr. Arthur Wontner gives the difficult part of Sir Robert Chiltern with delicacy and strength. Miss Phyllis Neilson Terry as Lady Chiltern and Miss Hilda Moore as the intriguing Mrs. Cheverley are both excellent; and both dressing and staging are as nearly perfect as they can be. The reception salon at Sir Robert's house, which forms the first act, is a very effective piece of design painted by Mr. Walter Hann, the columned entrance at the head of the stairway, flanked by two doorways, being well composed; and the same may be said of the morning-room in Sir Robert's house, which forms the setting of the second and fourth scenes. The taste shown in Lord Goring's sitting-room in Act III. is not so evident, but doubtless Lord Goring was more interested in mankind than in Art. These two latter scenes are painted by Mr. G. Sackmann.

At the Playhouse an admirable little comedy, by Mr. Richard Henry Powell—a comedy without a touch of farce, and the more successful for being so—gives Miss Marie Tempest a perfect opportunity for the display of her great histrionic talents. "The Wynmartens" goes without a hitch from beginning to end, and Miss Tempest is well seconded by an excellent cast, among whom we may mention Mr. W. Graham Browne, who takes the principal man's part, William Carrington; while the Earl of Carrington, a part very well filled by Mr. Franklin Dyall, gives us a perfect picture of an amiable fool. The Dowager Countess of Wynmarten, a part taken by Miss Agnes Thomas, affords an admirable picture of the most unpleasant old woman we ever remember seeing on any stage. The scenery, which represents a drawing-room in Belgrave-square, a room in a flat in Jermyn-street, and an engineer's office, is well chosen and appropriate, and the piece deserves to be a great success, as it is witty, true to life, and without dull intervals or unnecessary episodes.

At the Royal Court Theatre, Sloane-square, S.W., a large audience attended on Tuesday Mr. J. T. Grein's "Independent" professional *matinée* of Ibsen's "Ghosts," when some very fine acting was seen. The play was produced by Mr. Leon M. Lion, under whose direction and that of Mr. J. Fisher White, alternately, a series of these "Independent" *matinées* will be given, and the provisional repertory includes the titles of some interesting plays. The cast of "Ghosts" was a strong one, but the best acting was by Mr. Leon Quartermaine, as Oswald Alving; while Miss Bessie Halton, as Frn Alving, played a difficult part extremely well.

To try to describe "The Blue Mouse," now being played at the Criterion, would be to risk bursting the bubble of fun created by this clever and amusing farce. It is a long time since we have seen or heard of a German play. "The Blue Mouse" is an adaptation by M. Roy Horniman from the German by Engel and Horst—with so much well-managed and light-hearted wit reminiscent of earlier French work. No doubt the excellent acting adds largely to the success, above all, that of Miss Madge Lessing as the "Blue Mouse," Miss Mary Griffiths, Mr. Eric Lewis, and Mr. Percy Hutchison. The scenery throughout is very appropriate. The first act takes place in an office, two rooms of which are shown at the same time. The boudoir in the second act (to a certain extent a bed-sitting-room!) is decorated with an interesting scheme of black and gold, with blue hangings—a very effective combination. The third act depicts a very much simpler sitting-room. As a contrast to this delightful farce, the play by which it is preceded, "Hide and Seek," may be useful; otherwise it strikes us as futile and at the same time unpleasant.

MAGAZINES AND REVIEWS.

THE *Architectural Record* (New York) for May is, as usual, very well produced, but its contents are a little disappointing. They include a long illustrated article on St. John's Chapel, Vanek-street, New York—a church which reminds us of St. Martin's-in-the-Fields, but is without the charm and character of the latter—and an essay entitled "In the Cause of Architecture," from which we may quote one or two pithy sayings:—"The sins of the architect are permanent sins," and "To promote good work it is necessary to characterise bad work as bad"; while "Enemies are as valuable an asset to any forward movement as friends, providing only they be honest; if intelligent as well as honest, they are invaluable." Dealing with architectural journalism the writer (Mr. Frank Lloyd Wright) says: "The spirit of fair play, the endeavour to preserve the integrity of values intelligently on a high plane in order to raise the level of the standard of achievement in the country, and to refrain from throwing the senseless weight of the mediocre and bad upon it—all this is unhappily too rare in editors. The average editor has a constituency and not a standard. This constituency is largely the average architect who has bought the 'artistic' in his architecture as one gets dubious and minor aspects, of the sophisticated neophyte, the broker and the quack, to whom porter's work is ego-balm and fortune."

The work of an American sculptor, Augustus Lakeman, is another article illustrated by some fine photographs, among which we specially like the figure of Mosaic Law for Messrs. McKim, Mead, & White's Institute of Arts and Sciences, Brooklyn.

"The Architect," by Mr. Wilfred Beach, is a humorous and amusing sketch. The architect's duties are divided under the following heads:—

1. Getting business.
2. Corresponding.
3. Interviewing clients.
4. Selecting a site.
5. Preparing a mental or verbal prospectus
6. Evolving a schematic problem.
7. Executing preliminary sketches.
8. Perspective drawing.
9. Rendering in water-colour.
10. Rendering in pen and ink.
11. Developing the problem.
12. Computation and design of supporting materials.
13. Computation of footing and sustaining materials
14. Investigating and selecting materials of construction, both concealed and exposed.
15. Organising and managing an office force.
16. Preparing working drawings in detail.
17. Writing specifications.
18. Surveying quantities for estimating purposes.
19. Estimating costs.
20. Selecting and arranging sanitary equipment.
21. Designing heating system.
22. Designing ventilation.
23. Mastering acoustic problems.
24. Arranging artificial lighting.
25. Designing power plant.
26. Designing refrigerating equipment.
27. Arranging bells and telephone wiring.
28. Exerting the fire-fighting equipment.
29. Designing and selecting fixed, immovable furniture.
30. Laying-out special equipment.
31. Exerting ecclesiastical and fraternal ritual.
32. Designing ornamentation and embellishments.
33. Interpreting building law.
34. Drawing up contracts.
35. Superintending construction.
36. Auditing accounts.
37. Arbitrating disputes pertaining to building.
38. Supervising decorating and other accessories.
39. Collecting accounts.

The writer states that this list is far from complete, but makes the modest suggestion that some men delegate some of the duties put down to others!

CORRESPONDENCE.

The New Charter, R.I.B.A.

SIR,—Attention should be called to the new Charter now under the consideration of the Royal Institute, particularly with regard to Clause 8, which was under discussion when the meeting adjourned.

It will be remembered that the proposals as first put forward at the end of last year provided for the inclusion of the class of Licentiates as corporate members of the Institute, to which a great amount of opposition was raised at the time. In the later proposals—no doubt because of this opposition—the inclusion of Licentiates was dropped, and it was not referred to in any notice of the proposals or in convening the meeting, which led everyone to conclude that it had been definitely discarded.

Clause 8 reads:—"Representation on this Standing Committee and for the specific purposes only as defined in Clause 7 to be given to Licentiates. In all other regards the constitutional position of the Licentiates to remain as at present."

In introducing this clause to the meeting the spokesman for the Council made the suggestion that it should not be limited by the words, "for the specific purposes only," and that the words, "In all other regards the constitutional position of the Licentiates to remain as at present," be deleted.

That is a most dangerous suggestion, and savours somewhat of a deliberate trick on the part of the Council, or a section of it, to get this proposal through, in spite of the opposition to it, at a smaller meeting than might otherwise have been the case had any notion of this reversal of the Council's proposals been allowed to leak out. In spite of assertions to the contrary, "the cards were not on the table." It was evidently thought better to slip the suggestion in without warning towards the end of a tiring meeting and get a snap vote upon it.

Fortunately the meeting was adjourned before that consummation could be reached, and therefore it behoves all members of the Institute who have its dignity at heart to attend the adjourned meeting to prevent the proposal going through as a considered policy of the Institute as a whole.

The question for members to consider is briefly this:—"Will you have Licentiates as corporate members with yourselves or will you not?"

If not, go to the next meeting and vote it down by seeing that Clause 8 goes through only as it now stands, without amendment.

There is one other point which may bear calling attention to. Suggestions have been made that opposition to the Charter has been engineered from outside—a most regrettable circumstance if it were true. It would be deplorable that any outside body should have any say or influence whatever in the affairs of the Institute, and it may perhaps be hinted without disrespect that this applies quite as well to the august body of Academicians as to any other Society. LIBERA NOS A MALO.

Architectural Assistants in and out of H.M. Office of Works.

SIR,—The lot of "Assistant," who is a member of the Architectural Association, London, and who has had ten years' experience, must indeed be a hard one if, after spending £200 to £300 on his education—presumably, of course, his architectural education—he cannot earn more than £1 a week. One wonders whether he is capable of anything more than tracing, or whether, being something other than an assistant, he is attempting to mislead for some ulterior motive. Whatever his individual case or object may be, his statement does not represent the prevailing conditions of architectural employment.

While in no way wishing to enhance what are truly miserable conditions of pay amongst the ordinary architectural assistants, or to depreciate in any way their services, it must be pointed out that the temporary architectural assistants in H.M. Office of Works are on an

entirely different footing with regard to both pay and services. The outside assistants' slender salary is based on the tacit understanding that he is learning his profession and gaining experience. He enters the profession with the intention of starting practice some day for himself. Many fail to do so for various reasons. Of these a few become managing assistants, others enter Government departments, while the remainder, who do not keep themselves abreast of the times with regard to the latest fashion in design, drop out of the race and become failures or commercial travellers, which latter "Assistant" would be well advised to do. A keen man worth his salt can always either retain his position or obtain another. It is different with an assistant in H.M. Office of Works. A year or two of experience in that office may not materially hurt a young man except for the fact that to have been in His Majesty's Office of Works is no recommendation with the outside practitioner, owing to its architectural, or rather lack of architectural, reputation. He learns nothing there useful to him for a future career outside that office, and therefore the salaries paid by that office should not bear comparison with those paid in outside offices, where a man is adding appreciably to his value in the open market. They should be based on the actual worth to the Office of Works of the work the assistant does. As a matter of fact, however, they are not so high as would be paid by an outside architect who had £1,200,000 worth of work to get through in a year, in addition to writing voluminous reports on proposed works, or on alternatives to such proposals suggested by a clerical staff ignorant of all architectural matters. Such an amount of work necessitates the devolution upon the assistants of much responsibility, which is by no means adequately recognised or rewarded.

A MEMBER OF THE A.A. SINCE '96.

"History of Architecture."

SIR,—Notwithstanding my aversion to newspaper controversies, I venture to ask you to kindly allow me to reply to some of the remarks made by the writer of the review on my recently-published "History of Architecture" that appeared in the *Builder* of the 1st inst.

Your reviewer asks, fairly enough, having regard to the recent discoveries by Sir Arthur Evans, what can be said of the statement that "Some comparatively recent excavations at Mycenæ and Tiryns have revealed traces of Greek civilisation dating from about the year 1000 B.C., which is also the traditional date assigned to the writings of Homer. It is therefore tolerably certain that the islands and coasts of European Greece were held by the founders of the present nation at least as early as 1300 B.C."

The answer is that the first portion of the text-book, containing the chapter on Greek architecture, was written, and, so far as I know, printed and circulated, *before* the successful results of Sir Arthur Evans's labours in elucidating the mystery of Cretan civilisation were generally known. As to my remarks on the religion of the Greeks, the short paragraph, of some ten lines, to which allusion is made, contains nothing whatever that is opposed in root principle to the exhaustive survey of Greek religion and mythology included in the excellent manual of Greek antiquities written by Gardner and Jevons.

The Areopagus is not mentioned on page 58, but had I referred to it I should most certainly have followed Mr. Henry Nettleship and Dr. Sandys in describing it as "an ancient criminal court at Athens so named because it sat on Ares Hill beside the Acropolis."

Although the question of the derivation of the term should not have been dragged into the review under discussion, I may as well add that Dr. Gow, with the characteristic caution of his countrymen, is more keenly alert to the danger-signal, and, if I may so express it, "plays for safety" by admitting that the *Areios pagos* was *possibly* so called *not* from Ares, but "from the *Arai* or avenging deities" represented by the court of Areopagus.

I regret that I did not express myself with sufficient clearness in pointing out the connection between the Greek goddess, Athene, and the Roman goddess, Minerva. The absurd term, "Minerva Polias," of course, should read, "Athene Polias."

No sketch of the life of Cæsar, adequate or "inadequate," is given, nor is there anything "misleading" in the few bald statements made as to some of the leading events in his career.

With regard to the Pantheon, notwithstanding Lanciani's assertion that the structure, as it now stands, is of the age of Hadrian, it is fair to say that the history of the building has not yet been ascertained with absolute certainty.

Between the date of the erection of Agrippa's building in 27 B.C. and the year A.D. 202 successive restorations were carried out under Domitian, Hadrian, Septimius Severus, and Caracalla; and the theory that at least the circular portion of the structure dates from the Hadrianic Age rests mainly upon the result of a careful examination of the *cella* made in 1892, when bricks were found stamped with dates extending from A.D. 115-125. This discovery, taken in conjunction with the fact that traces of an earlier rectangular building were observable, led to the statement that the present circular part of the building was built in Hadrian's time to replace an earlier *rectangular* temple of Agrippa. But I can find nothing whatever against the equally probable theory that the work of Hadrian's age comprised the thorough restoration and partial re-erection of an earlier *circular* building. In these vexed questions tradition is not to be ignored, and it is the historian's duty to carefully discriminate between ascertained fact and speculative suggestion, and to reject any theory that cannot be supported subsequently by the most conclusive evidence.

Your reviewer's statement that:—"The date, 1760-70, to which Horace Walpole's influence is ascribed on page 194, is too late, since he purchased and popularised Strawberry Hill in 1747, and no notice is taken of the fact that Gothic was in the air—witness Shenstone's letter as to Gothic wallpapers some years earlier," is erroneous and altogether misleading.

Although it is true Walpole bought the house in 1747, yet it was not until six years after that, to quote Mr. W. P. Courtney, "He began a series of alterations in the Gothic style, not completed for nearly a quarter of a century later, under which the original cottage became transformed into a building without parallel in Europe." The dates of these successive building operations, given in Fergusson's "History of Modern Architecture," are as follows, viz.:—"The lower cloister in 1760-61, the Beauclerc tower and octagon closet in 1766, and the north bedchamber in 1770."

It is surprising to learn that "Gothic was in the air" some years prior to 1747. It was certainly an abnormal atmospheric condition that was worth recording.

Finally, I did not say that Beckford's buildings at Fonthill, erected in 1795, were either "the earliest or the most conspicuous of the larger buildings of the Gothic Revival."

ALFRED W. S. CROSS.

BOOKS RECEIVED.

GAS AND OIL ENGINE MANAGEMENT. By M. Powis Bale. (London: Crosby Lockwood & Son. 3s. 6d. net.)

PRACTICAL SANITARY ENGINEERING. By Francis Wood. (London: C. Griffin & Co., Ltd. 8s. 6d. net.)

NOTES ON THE VALUATION OF REAL PROPERTY. By H. G. Lamputt. (London: Crosby Lockwood & Son. 1s. 6d. net.)

GENERAL NEWS.

Measured Drawing, Manchester Old Town Hall.

Mr. Gordon Hemm has presented to the Libraries Committee, Manchester, his measured drawing of the façade of the Manchester old Town Hall. The drawing is now hung in the vestibule of the Reference Library, Piccadilly, Manchester.

Dublin Housing Scheme.

At their meeting, held on May 11, the Dublin Corporation resolved unanimously to expend a sum of £45,800 upon the erection of workmen's dwellings on the Ormonde Market site—that amount being inclusive of £10,000 for the acquisition of the property. The Corporation resolved also, by twenty-four votes to nine, to expend £39,300 upon the clearance and rebuilding on areas in Upper Mercer-street and Crabbe-lane.

The Cathedral Tower, Antwerp.

The restoration is about to be begun of the commonly-styled "Cathedral Tower" of the Church of Our Lady, Antwerp. The tower, belfry, and spire are the property of the municipal authorities, who, finding that the stones evince signs of decay, will spend an initial sum of from £4,000 to £5,000 upon the erection of scaffolding in order that every stone may be examined *in situ*. It is expected that the actual work of reparation will extend over a period of from twenty to thirty years.

Association of Teachers in Technical Institutions.

The Association of Teachers in Technical Institutions will hold its eighth annual conference at Liverpool during Whitsuntide—May 30 to June 3. The educational meetings will be held in the large hall of the Central Municipal Technical School. The open meetings begin on Monday, June 1, at 10.30 a.m., when the Chairman of the Liverpool Education Committee, Councillor J. W. Alsop, B.A., J.P., will welcome the Conference to Liverpool, and the President, Mr. P. Abbott, B.A., will deliver his Presidential Address. During the Conference papers will be read by Mr. W. Hewitt, B.Sc., the Director of Technical Education for Liverpool, Professor Haldane Gee, Mr. W. E. Harrison, Mr. Laurence Small, Mr. W. R. Bower, and others. Sectional meetings will be held on the afternoon of June 2, when papers of special interest to the various sections of technical education will be read. Resolutions on matters of educational and professional interest will be discussed at the various meetings. The annual dinner will be held at the Exchange Station Hotel on the evening of June 1.

Stonehenge.

We have before us an appreciation of Stonehenge, by Mr. William Burroughs Hill, F.S.I., of Southampton, which is illustrated by two good reproductions from Turner's and Constable's pictures, as well as a photograph showing its present condition. Mr. Burroughs Hill does not add much to our knowledge of Stonehenge, but the little brochure will no doubt serve a useful purpose in reminding the ignorant of the value to be attached to one of the oldest, if not the oldest, of the remains of the past in these islands. Fortunately there is no longer a possibility of the remaining stones being used as quarries, and the opponents of restoration will never have to fight for the preservation of what is left intact, for no one would venture to propose the restoration of the great circle of stones in its original form!

LAW REPORTS.

KING'S BENCH DIVISION.

(Before Mr. Justice SANKEY.)

Action upon a Guarantee against Partner in Firm of Contractors:

General Accident, Fire, etc., Corporation, Ltd. *v.* Knowles.

THIS case was heard last week, an action brought by the plaintiffs against Mr. Eric Walter Knowles, a gentleman residing in Yorkshire, for a declaration that he, as a partner in the firm of Messrs. Pethick, Dix, & Co., contractors, of No. 121, Victoria-street, Westminster, was liable to the plaintiffs in a sum of £2,500, they having guaranteed that amount to Parr's Bank, and paid it. Defendant denied all liability.

Mr. Gore-Browne, K.C., and Mr. Beyfus appeared for the plaintiffs; and Mr. Pollock, K.C., and Mr. Cohen represented the defendant.

Mr. Gore-Brown said the substantial question for decision was whether the defendant was a partner in the firm of Messrs. Pethick, Dix, & Co., and therefore was liable upon the guarantee. In 1910 there was a firm called Messrs. Pethick, Dix, & Co., in which the partners were Mr. Pethick and Mr. H. St. John Dix, the firm carrying on business as railway and public works contractors. In 1910 they had a contract in connection with the Derwent Valley Light Railway. In 1911 these gentlemen dissolved partnership. Mr. Dix continued to carry on business as Messrs. Pethick, Dix, & Co., and Mr. Pethick became a salaried manager, but took a share of the profits. On July 31, 1912, the defendant, who had to some extent been financing the firm, entered into a deed of partnership, which purported to be a limited partnership to last for ten years. The business was carried on at No. 121, Victoria-street, Westminster. The capital was to be £40,000, and of that amount Mr. Dix was to contribute by bringing in the plant, stock in trade, assets, and goodwill of the business previously carried on by him, with the exception

of the Derwent Valley contract, and for that he was to be credited with £20,000. The capital the defendant was to bring in was £20,000, of which £15,000 was to be in cash and £5,000 was to be paid by transferring to the firm a debt of £5,000 which Mr. Dix owed the defendant. It was, said Counsel, a little difficult to know what was done under that agreement of July or how the business was carried on thenceforward. It was found, however, that there were new contracts made with public bodies—viz., with the Matlock, Bradford, and the Hull Corporations. Messrs. Pethick, Dix, & Co. then determined to turn themselves into a limited company, and on March 13, 1913, the company was formed for taking over the business of the firm. The defendant signed the Memorandum and Articles of Association as a signatory. Under separate agreements the partners transferred their interests to the limited company. The defendant sold his interest in the firm to the limited company, and received 20,000 shares for so doing. Before the limited company was formed, viz., in January, 1913, the firm applied to Parr's Bank for an overdraft of £2,500, which plaintiffs guaranteed to the bank. By way of security a number of shares in the Derwent Valley Light Railway had been given to plaintiffs. Subsequently the bank called in the money and the plaintiffs paid it, and wrote to the defendant, demanding payment from him on the ground that he was a partner in the firm. After getting the defendant's reply the present action was brought.

Evidence was then called in support of the plaintiffs' case.

Mr. Pollock, on behalf of the defendant, submitted that there was no case made out against his client. The liability to which he was exposed was a very heavy one, because the debts of the partners ran into £20,000 to £30,000. He submitted that there was no liability on the defendant. It was clear from the documents that he joined the firm of Messrs. H. St. John Dix & Co., and no other firm, and that was the only firm that was registered. His learned friend on the other side had said that that firm had faded away and ultimately became Messrs. Pethick, Dix, & Co., but that was an erroneous contention.

Defendant was then called, and said he knew nothing of the guarantee to the plaintiffs until he received a letter from them asking for the money. He had no idea that he was a partner in the firm of Messrs. Pethick, Dix, & Co. He had received no profit or interest in that firm.

Cross-examined, defendant said he was practically a figure-head in his firm, and neither bought nor sold.

In the result, Mr. Justice Sankey, in giving judgment, said he did so with great reluctance, as the defendant was a young man, and had lost a great deal of money owing to his associations with Mr. Dix. He came, however, to the conclusion that the defendant was bound by the recitals in the agreement, and that what the plaintiffs said was substantially correct. He therefore entered judgment for the plaintiffs for the amount of their claim, with costs, and refused to grant a stay of execution.

Solicitors for the plaintiffs, Messrs. Beyfus & Beyfus; for the defendant, Messrs. Francis & Francis.

Architect and Stop Orders for Stone: Important Considered Judgment.

In the Bow County Court recently, Judge Smyly, K.C., delivered a considered judgment in an action of considerable importance to stonemasons and architects. The plaintiffs were Messrs. McLeod & Co., Ltd., of 85, Gracechurch-street, E.C., artificial stonemakers, and the defendants, Mr. A. G. Barton, of Daventry Works, High-street, Walthamstow; Mr. Johnson, of Sutton Lodge, Hackney; and Mr. Gardner, of 14, Albert-road, Walthamstow, trustees of the United Methodist Free Church, Central Hall, Forest-road, Walthamstow, the claim being for £28 4s. 1d. for stone supplied. There was a counterclaim for £35, occasioned, it was alleged, through the supplying of stone to wrong measurement.

Mr. Barton, barrister, appeared for the plaintiffs, and Mr. E. H. Coumbe was counsel for the defence.

It seemed that the United Methodist movement, which was started in a theatre, gained such ground that it was decided to build a hall. Tenders were put out, and that of Messrs. W. J. Holmes & Son, builders, of Catford, was accepted. It was a point in the specification that the stonework should be supplied by Messrs. McLeod & Co., or people of their standing. When the order was placed with them Messrs. McLeod did not care to trust the builders financially, and the difficulty was put before Mr. Dunford, the architect. It was then agreed that the plaintiffs should supply the stone on stop orders on their work by Mr. Dunford, that meaning to say that, up to £70 a time, money due to the builders should be stopped by the trustees and paid by the architect to the plaintiff. The whole contract of the builders was £2,475, while the plaintiffs' contract was for about £300. From time to time stone was supplied, but difficulties arose with the builders, and while the trustees were pressing for the work to be finished the plaintiffs refused to supply until they were paid on their stop order. Finally the trustees took the finishing of the building in hand themselves, and it was for the balance of the stone supplied that the plaintiffs were now suing. The defendants, however, alleged that a quantity of it was not to the measurement in the drawings, whereas the plaintiffs said that it was supplied exact. The defendants also repudiated the authority of the architect to give stop orders, and the whole case was fought out on the question of the powers of an architect to issue such stop orders.

Mr. Dunford said it was quite the usual thing for an architect to give such stop orders, and he also said that his orders were ratified by the trustees the whole of the time, inasmuch that they signed the cheques from time to time to pay the plaintiffs.

In giving judgment, Judge Smyly said the members of the Building Committee, consisting of three, were engaged in building the hall under a contract placed with Messrs. Holmes. It would appear that that firm had not much capital, and the plaintiffs, before accepting an order for stone, asked Mr. Dunford, the architect, for a stop order, saying Messrs. Holmes were willing to agree to it. On a letter of Messrs. Holmes the architect agreed. It really only meant that money paid by the trustees would be earmarked to the plaintiffs by Mr. Dunford instead of going to Messrs. Holmes. The defendants alleged that Mr. Dunford had no power to issue such stop orders; but he considered from the specification, asking that plaintiffs' stone should be supplied, that he had. This stone was to be ordered off a special tradesman, and the money was to be paid to such firms as the architect might direct. There was clearly power, therefore, when a special tradesman was dealt with for the architect to pay direct; that gave him authority. He thought the defendants had ratified the agreement by paying on Mr. Dunford's certificate. He was also satisfied that a large quantity of the material for the hall was supplied on stop orders. A stop order did not increase the liability of the trustees; it only meant the tradesman getting his money, but only when he had supplied the goods. They suggested that when they took matters in hand the stop order should have been withdrawn; but he could find no authority for the procedure of an architect to withdraw a stop order. Then, again, it was suggested that the measurements were wrong; but on reading into the contract he found that any defects that were discovered within three months should be made good by the contractors, therefore it was in the power of the architect to put the matter right. From that, and all other circumstances, he considered the architect had acted perfectly correctly, and that the defendants were liable for £26 9s., less £1 4s. 1d. paid into Court. As to the counterclaim, it was clear from the contract that the defendants were not liable for anything, only the builders. If the plaintiffs had broken their contract, therefore, they would be liable to Messrs. Holmes. If the trustees sued the plaintiffs, and recovered, it would mean they would have to pay twice, as the contractors could certainly sue. Because they made themselves liable on the stop orders, it did not entitle them to sue. His verdict would be for £26 9s. for the plaintiffs, and for the plaintiffs in the action on the counterclaim.

Judgment was entered accordingly.

PARLIAMENTARY NOTES.

Building Trade Dispute.

Questioned by Mr. Wing as to what steps the Board of Trade had taken to bring about a settlement of the building trade dispute, Mr. Burns replied that the Chief Industrial Commissioner had been in communication with the parties, and it was well known that the good offices of the Board of Trade were at their disposal should they desire to avail themselves of them.

Indian Architecture.

Four questions have been put by Mr. King in the House of Commons to the Secretary of State for India on the subject of Indian architecture. They were:—(1) If he was aware that a certificate of an Indian engineering college was required from persons seeking appointments as building experts under district boards; whether these engineering colleges or the architectural section of the Bombay School of Art provided theoretical or practical instruction in the traditional building craft of India or had any teachers on their staffs who had studied the subject and were qualified to give instruction in it; and, if not, whether the Secretary of State or the Government of India would consider the desirability of ensuring greater efficiency in this respect. (2) If his attention had been drawn to the fact that a fine mosque, larger than Shah Jahan's great mosque at Delhi, and considered by expert authority to be better in design than the latter, was now being built at Bhopal entirely by Indian master builders using traditional Indian methods; whether it was stated, in an official reply to a petition presented to the Secretary of State, urging the employment of Indian methods of buildings at the new Delhi, that such methods had long ceased to be applicable to works of any magnitude; and whether the Government of India considered it expedient that master builders of such capacity should be barred from municipal employment of over 50 rupees per month for want of a certificate from a Government engineering college. (3) Whether the European architectural experts of the Public Works Department, appointed by the Secretary of State to advise the supreme and local governments, were given sufficient opportunities for acquainting themselves practically with Indian building craft upon the sites of buildings, or whether they were chiefly occupied in the preparation of drawings to be used as patterns by Indian craftsmen; and, in the latter case, whether the Government would call upon their experts for suggestions for improving the system. (4) If he had noted that the Report on Modern Architecture, published last year by the Government of India, revealed the fact that Indian master builders working independently of the Public Works Department generally showed much greater power for original work and a higher standard of technical skill than those employed by the department; and whether the Government of India would investigate carefully the reasons for the deterioration of Native craftsmanship, and especially to what extent this was due to the conditions and methods of departmental building in India.

Mr. C. Roberts, Under-Secretary of State for India, replied that the first question presumably referred to the rule in force in the Madras Presidency, directing that, except with the express sanction of Government, no one should be appointed as an assistant engineer to a district board unless he had a University degree of B.E. or an engineering college certificate in engineering. The duties of a district board engineer were largely concerned with roads and bridges, and a rule requiring evidence of training as a civil engineer was of obvious expediency. The Secretary of State was not informed as to the extent to which instruction in the traditional building craft of India was given, but it might be assumed that the matter had not been overlooked. With regard to the second question, the Secretary of State did not feel in a position to commit himself on the architectural merits of the mosque referred to. As to the third question, the Consulting Architects to the Indian Government were employed to carry out the usual functions of architects, and the Secretary of State had no reason to doubt that they were given sufficient opportunities of the kind suggested. He did not propose to address the Government of India on the subject. In reply to the last question, the Secretary of State was unable to associate himself with Mr. King in the inference he drew from the Report on Modern Architecture. The matter was merely one of opinion. The encouragement of Indian craftsmen and their more extensive employment on Government buildings were objects which the Government of India desired to further in any way they could.

Urban Housing.

Replying to Mr. Keir Hardie as to whether the Government could grant an extension of time for loans for making and paving private streets from seven to twenty years, Mr. H. Samuel said he could not accept the statement that the number of working-class houses in urban areas was diminishing. Where local authorities were making streets in connection with the provision of houses by them, the term usually allowed for repayment was twenty years. Where the cost of making-up the streets was to be repaid by the frontagers, a period of seven years had hitherto been usually allowed; but in future, if a case could be shown for a longer period, and the local authority was willing, the Local Government Board would be prepared to consider an extension of the time for the repayment of the loans.

Leading Contents.

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ILLUSTRATIONS.

View of the Arch of Titus.

WE illustrate another of Piranesi's engravings from "Le Vedute Romane."

Paddington Baths.

Selected Design.

THE problem set to the competitors was to provide a set of swimming and private and Russian baths, and at the same time so plan the first-class swimming bath that it can, in the winter months, be floored over and used as an important central public hall. The prominence thus given to this public hall was of the utmost importance, for it was a stipulation that it must be so self-contained that it would not in any way interfere with the carrying on of the rest of the bathing establishment, including the second-class bath, during the winter months. The importance attached to this public hall necessitated designing the building so as to give it the appearance of an important public buildings and the author has endeavoured to combine these requirements without unnecessary expenditure of money or superfluous embellishment. HAROLD BURGESS.

Second Premiated Design.

This design, submitted in competition, was governed by the fact that the inclusive cost of the whole scheme was not to exceed £42,000. Deducting from this sum the cost of artesian well and pumping machinery, quantity surveyor's fees, and salary of clerk of works, left practically £40,000 for the building, engineering, and equipment complete.

The governing principle underlying the planning and arrangement of this scheme was that the after administrative cost should be reduced to a minimum.

An endeavour has been made to obtain a symmetrical lay-out of the plan, and to keep within the limit of cost, in the heights of the buildings and the architectural treatment of the façades.

Neither of the large swimming halls are built over in any part, nor are any of the slipper or Russian baths—the whole of which have top light and ventilation throughout. A small Turkish bath was suggested in connection with the Russian or vapour baths.

The club and committee rooms were so planned as to be easily let off for small meetings, etc., without interfering in any way with the bathing establishment.

The entertainment entrance, from Queen's-road, to the first-class amphitheatre swim, was arranged so as to also be available as an entrance to the proposed public hall. This entrance, etc., was included in the scheme, the tower above (in pencil) being a suggestion for completion when the public hall was built.

The estimated cost of the scheme at 1s. per cubic foot, was £39,500.

HERBERT SHEPHERD.

MEETINGS.

FRIDAY, MAY 22.

The Surveyors' Institution.—Visits to (a) York Minster, the Museum Gardens, St. Mary's Abbey, and the Yorkshire Philosophical Society's Museum; (b) Messrs. Rowntree's Cocoa Works and the Model Village for Earswick; (c) the Olympia Oil and Cake Mills, Selby, and Selby Abbey.

The Royal Institution of Great Britain.—Mr. Robert Mond, M.A., on "The Mortuary Chapels of the Theban Nobles." 9 p.m.

SATURDAY, MAY 23.

Edinburgh Architectural Association.—Visit to Dalzell Castle, Motherwell. (Leave Princes-street Station, 1.30 p.m.)

Surveyors' Institution.—(a) Excursion to Jervaulx Abbey, Fountains Abbey, and Harrogate. (b) Excursion to Brodsworth Colliery, Woodlands Model Village, and the Brodsworth Stock Breeding Establishment.

MONDAY, MAY 25.

Royal Society of Arts (Colonial Section).—Major E. H. M. Leggett on "The Economic Development of British East Africa and Uganda." 4.30 p.m.

WEDNESDAY, MAY 27.

Institute of Sanitary Engineers.—Visit to Eton Rural District Council Sewage Outfall Works at Gerrard's Cross, Bucks. (Train from Marylebone at 2 p.m.)

THURSDAY, MAY 28.

The Concrete Institute.—Annual dinner of the Institute, in the Connaught Rooms, Great Queen-street, W.C. 7 for 7.30 p.m. Annual general meeting. 4.30 p.m.

Society of Antiquaries.—Ordinary meeting. 8.30 p.m.

Incorporated Church Building Society.—Annual Court, at the Church House, Dean's-yard, Westminster. 3 p.m. Mr. Frank L. Pearson, F.R.I.B.A., will address the meeting.

MODERN FABLES—VIII.:
THE "CONSTRUCTOR" AND THE INSTITUTE OF ARTIFICERS.

Now, in the lands watered by the Ganges, even by the sacred river in the days when Mahabaratá and Ramayaná were yet unwrit, was an Institute of Artificers. Great glory had it among the artificers, and great was the heed paid unto its dictates; its yea and nay were regarded as final, and all men, even the King's bodyguard and the keeper of the sacred places, bared their heads when the dictates of the Institute were promulgated. A Journal issued the Institute even to its members, girt in sacred yellow, and proud were they to whom the Journal was given, and many sacred letters were they able to add unto their names.

Now, in the land were also certain journals which the artificers read occasionally when they rested after eating dates in the sunshine, and while pondering each how he could excel his neighbour's handiwork and work with exceeding craft and skill.

But these journals were given even for copper in the public places, nor had they the extreme sanctity of the Journal which was enclosed in sacred yellow and given for reward even to those who added the sacred letters to the names bestowed by their ancestors upon them.

The leaves of the sacred Journal were filled with the discourses made by those honoured even on the sacred hill of the artificers, yet out of charity did the keepers of the sacred volume allow even the journals to copy their writings.

But because the sacred volume was holy, nor might its contents be given freely even to the unclean who had not the sacred letters, made the great ones wise restrictions, saying "One million words are here written, wherefore mayest thou write of these but five hundred, which convey the fullest meaning."

Now, they who wrote one of the artificers' journals, even that called the *Constructor*, did scratch their heads exceedingly and cool their brows with water, saying:—

"Miserable that we are, how can we give the sacred writings in small compass, and how shall man understand our abbreviations?"

Then they girt their loins even with the cloth of humility and dressed their heads with wrappings of patience, and went before the keepers of the sacred books which are girt around with yellow, saying: "Man hath not the wit nor pen the nimbleness to work miracles in this land, nor can we give the sacred writings in the space allotted. May we not, therefore, even give one-half of the sacred writings that all may clap their hands and say, 'Great and exceeding good is the Institute of Artificers'?"

But the great ones took counsel among them and said even with unanimity: "Great are the holy books, nor shall men take more than the crumbs of their contents!"

Then were the keepers of the *Constructor* silent, for they wotted not how miracles could be wrought, nor could they satisfy their readers with puzzles.

Yet because the sacred writings were precious even as jewels made they more protestations until the keepers of the sacred volume, taking pity upon them, yet having regard to the greatness which had been given them, spoke even in this wise:—

"Our volumes are sacred even beyond the understanding of man, and many are the secrets contained in them, yet because of our greatness will we yet show compassion and forbearance. Ye may, therefore, copy even one-third of the sacred writings if, peradventure, the guardian of their sacredness will permit it."

Then did the keepers of the *Constructor* make answer, saying: "Hard are thy conditions, and better would liberality become thy greatness and make known unto man thy majesty, yet because of the value of the sacred writings will we try to make their sacredness known unto all men. For, even though we be as dust in thy sight, and thy sacredness beyond the understanding of all men, yet is the sun which shines on all handicrafts over both the sacred books and our journal, which we give for copper in the market-place. Our advantage seek we not, for we are humble; thy sacredness we esteem, for we have understanding; yet are the Gods we serve those ye also worship, and the way ye strive to light with lamps that also we try to brighten even with little torches."

Moral.—Compassion becomes the great, nor will condescension soil the hem of their garment even in the day when the deeds of mortals are judged.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Viscount Peel, Chairman, presiding.

Tenders.—Tenders were received for enclosing additional land, etc., at the Raywood-street School, Clapham; for the supply of tramway fittings, equipment, etc.; for certain work at No. 4, London-road, Lewisham, in connection with the widening of that road.

Loans.—The Finance Committee recommend that loans be made to Borough Councils as follows:—£15,750 to the Hackney Borough Council for electricity undertaking; £21,023 to the Lewisham Borough Council for paving works; £15,000 to the Stepney Borough Council for electricity undertaking; £542 to the Woolwich Borough Council for electricity undertaking.

Overhaul of Machinery.—The Main Drainage Committee recommend that the work of overhauling the machinery at North Woolwich Pumping Station be continued; that expenditure on maintenance account not exceeding £200 be sanctioned for the purpose; and that the work be carried out at a cost not exceeding that amount, under the direction of the Main Drainage Committee, by direct employment of labour; that certain protective works at the Heathwall sewer at Nine Elms be undertaken; that expenditure on maintenance account not exceeding £220 be sanctioned for the purpose; that the Main Drainage Committee be authorised to arrange for the execution of the work, subject to any action taken in the matter being reported to the Council in due course.

Electricity Supply.—Mr. Lewis moved a nominal reduction of the estimate of the Special Committee on London Electricity Supply, with instruction to the Committee to report fully by the second Tuesday in July "as to the methods best calculated to place London in the most advantageous position in regard to electricity supply." He drew attention to the urgency of the question, which had been under the consideration of the Committee for twenty-eight months, and to the stress laid upon it by the experts in their reports. Mr. A. H. Scott seconded the motion. Mr. Reynolds urged that the Committee should be given the utmost possible time before reporting on such a vast adventure. The Chairman of the Committee said the importance and urgency of the subject was fully realised by the Committee, and it was their object to be prepared with proposals for next session of Parliament. The matter would be brought before the Council at the earliest possible moment. The amendment was defeated by a large majority.

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Veduta dell'Arco di Tito
1 Villa Farnese. 2 Avanzi del Tempio detto di Giove Statore. 3 Monte Capitolino. 4 Ruine del Tempio detto della Pace

VIEW OF

(FROM PIRAN

IEW OF THE ARCH OF TITUS.

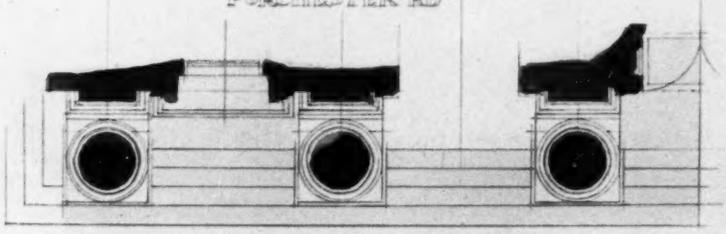
OM PIRANESI'S "LE VEDUTE ROMANE.")

BOROUGH OF PADDINGTON · LONDON

PROPOSED · CENTRAL · BATHS

BRONZE AND GLASS DOORS

ENTRANCE · FRONT
· PORCHESTER · RD ·



PLAN

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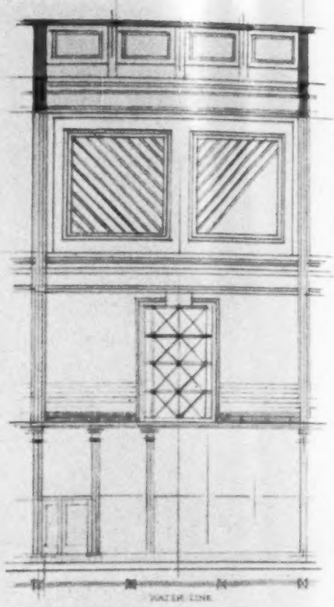

WATER LINE

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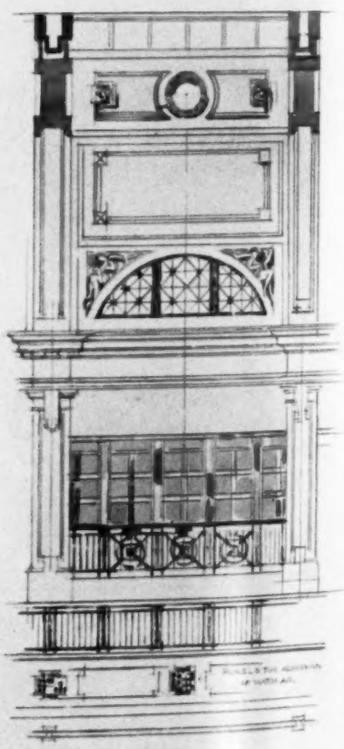
2ND CLASS · BATH ·

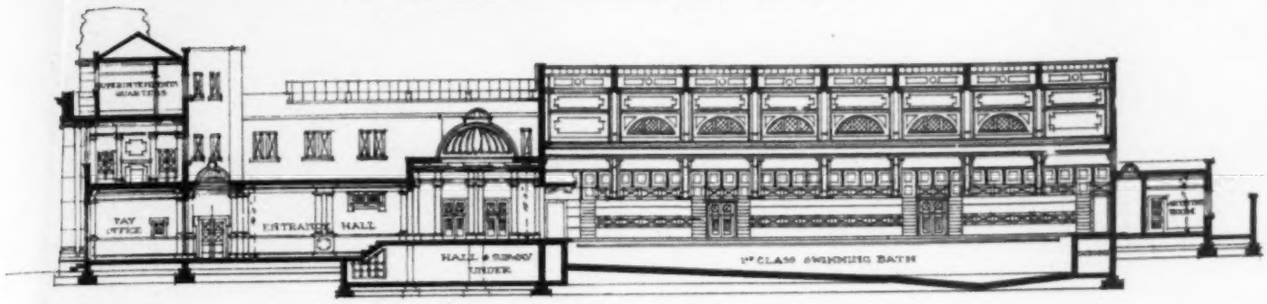


· ONE · BAY · OF ·
· 1ST CLASS · BATH ·

BOROUGH OF PADDINGTON · LONDON

PROPOSED CENTRAL BATHS

SCALE OF FEET



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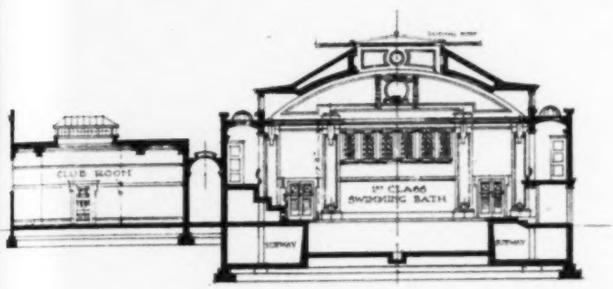

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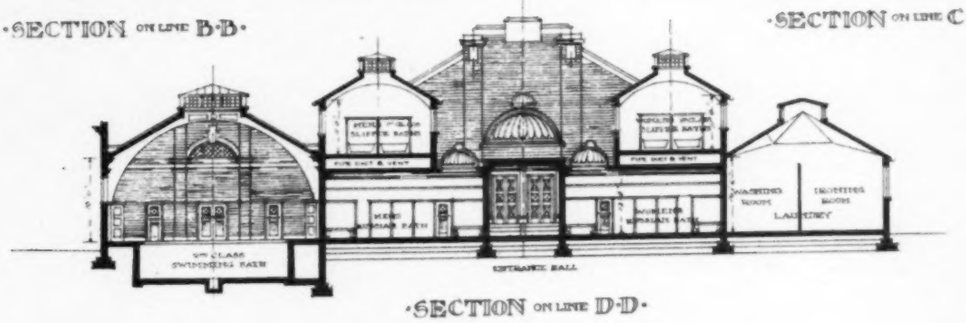

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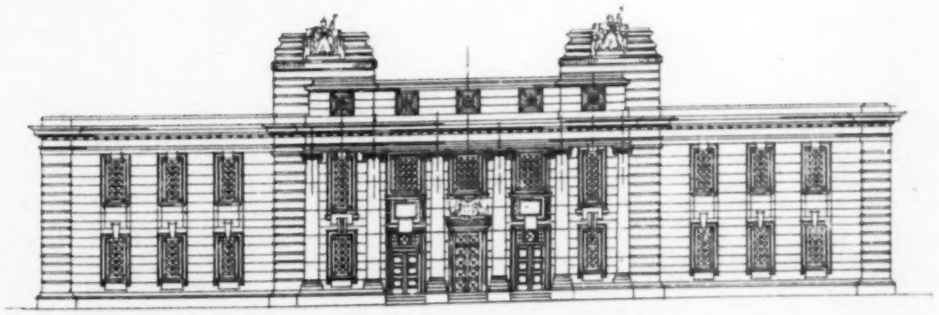
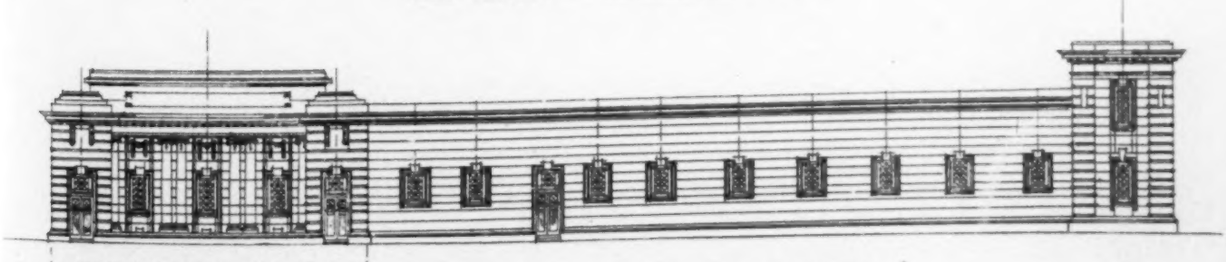


·ELEVATION TO PORCHESTER ROAD·



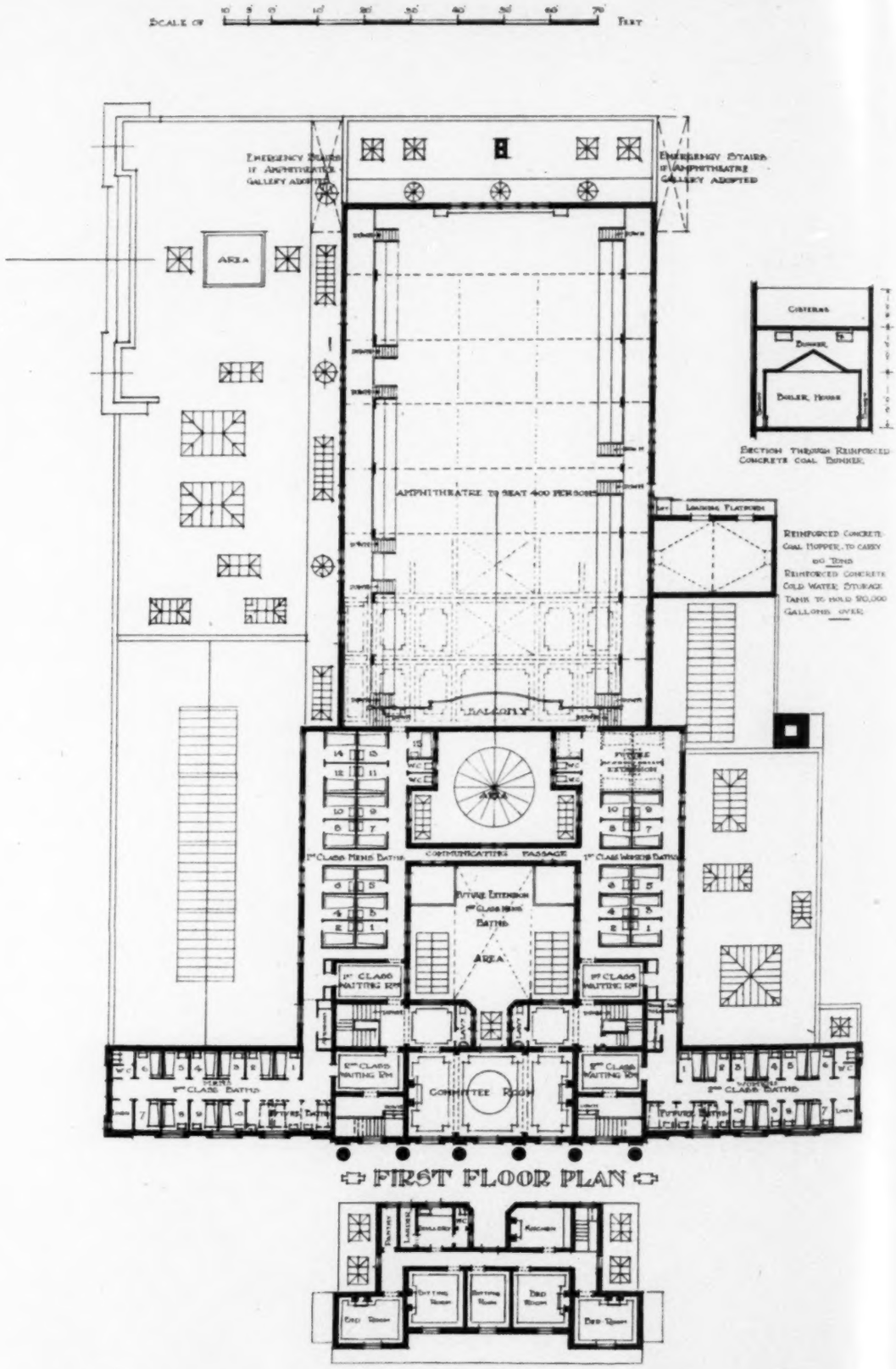
·ELEVATION FACING QUEENS ROAD·

·ELEVATION TO PORCHESTER HOUSES·

N.—Mr. Harold Burgess, Architect.

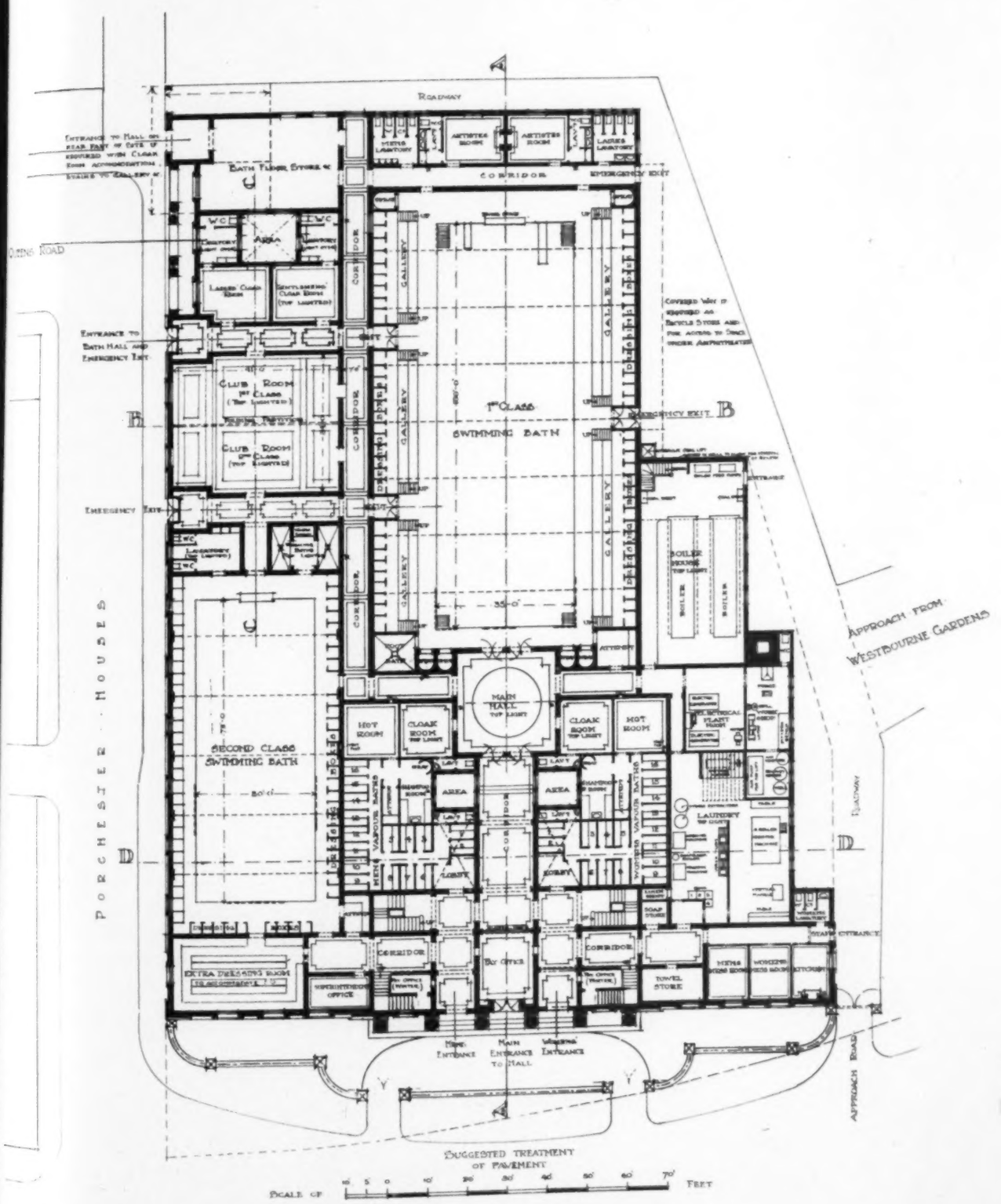
BOROUGH OF PADDINGTON - LONDON

PROPOSED CENTRAL BATHS



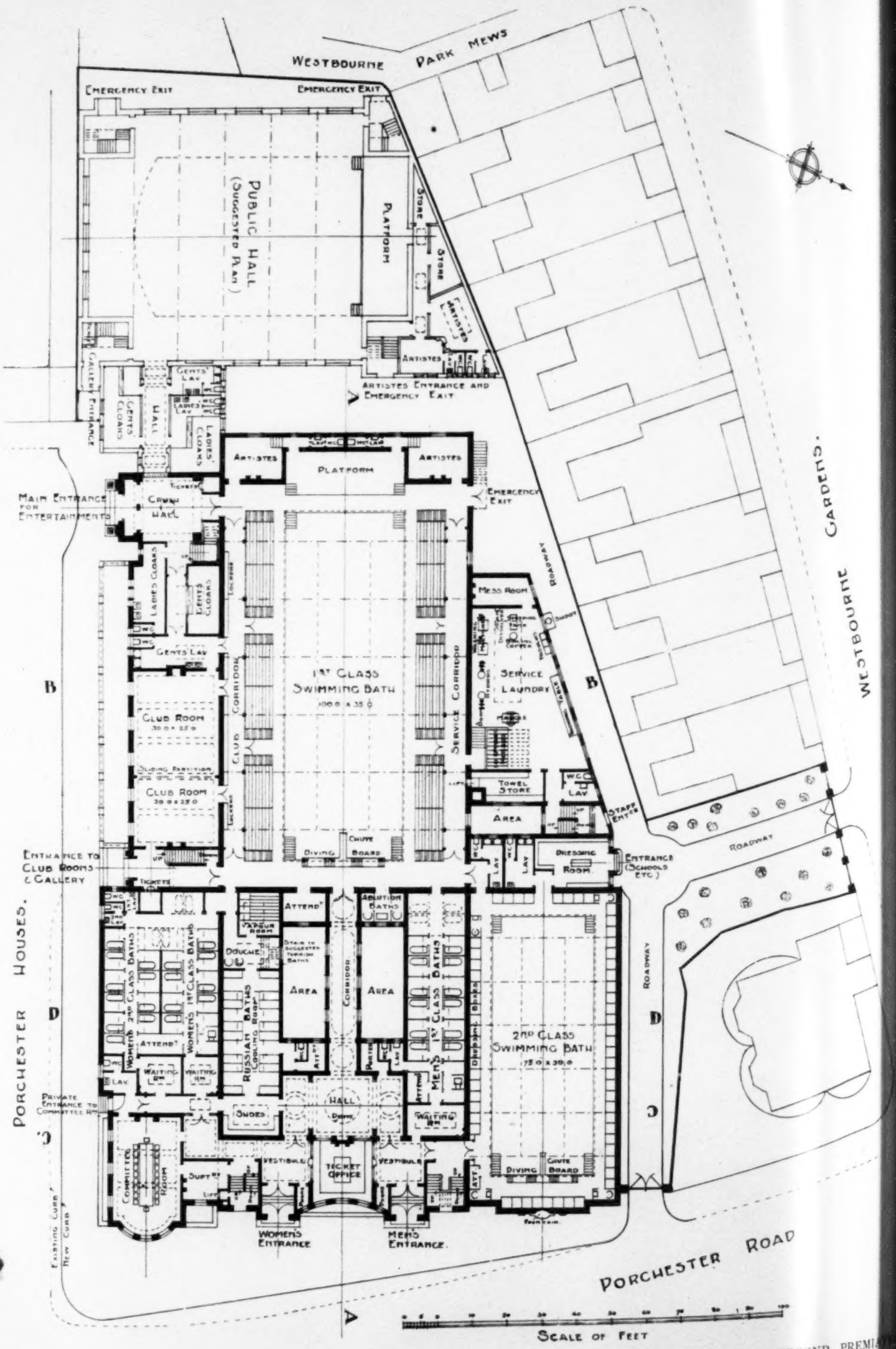
BOROUGH OF PADDINGTON-LONDON

PROPOSED CENTRAL BATHS



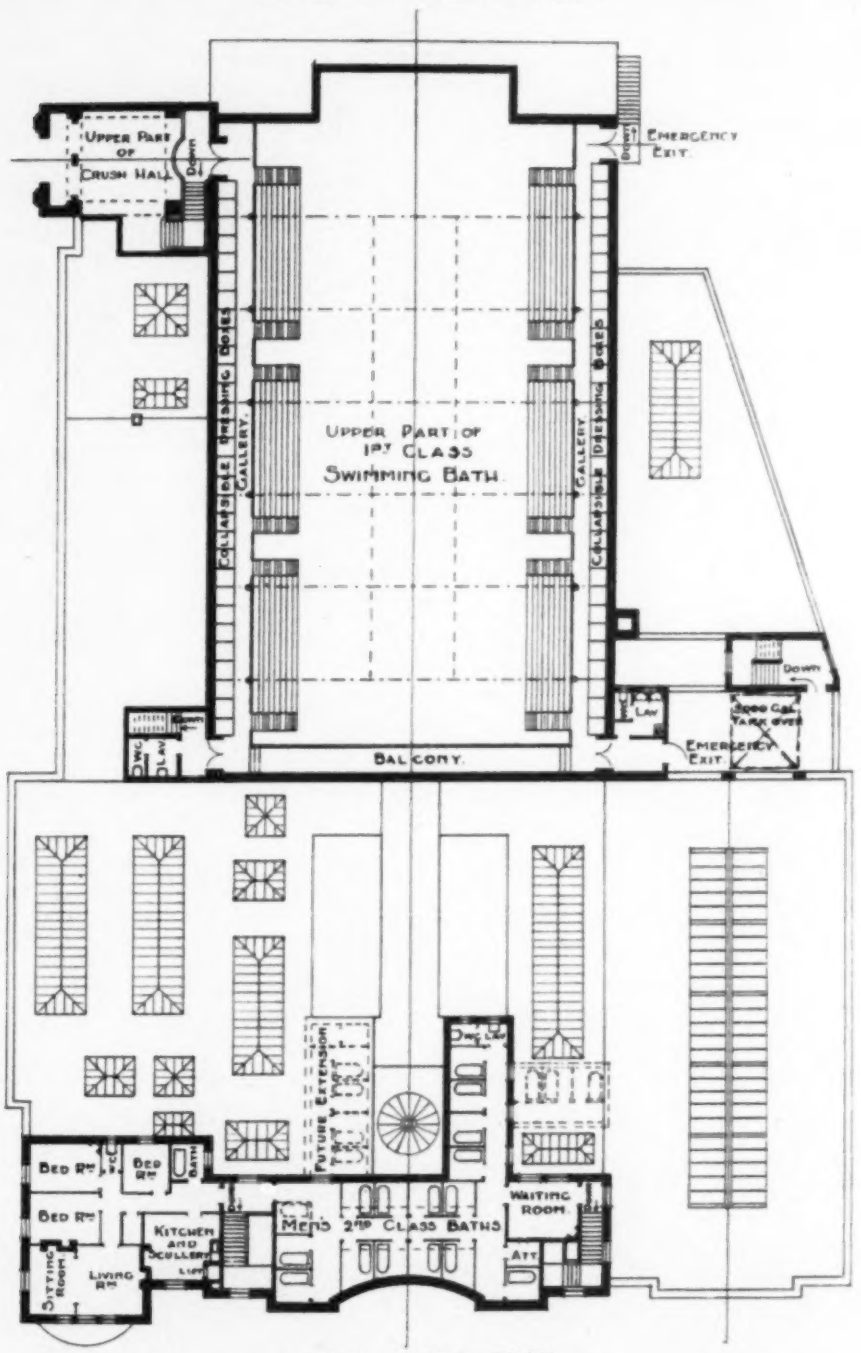
GROUND FLOOR PLAN

N.—Mr. Harold Burgess, Architect.

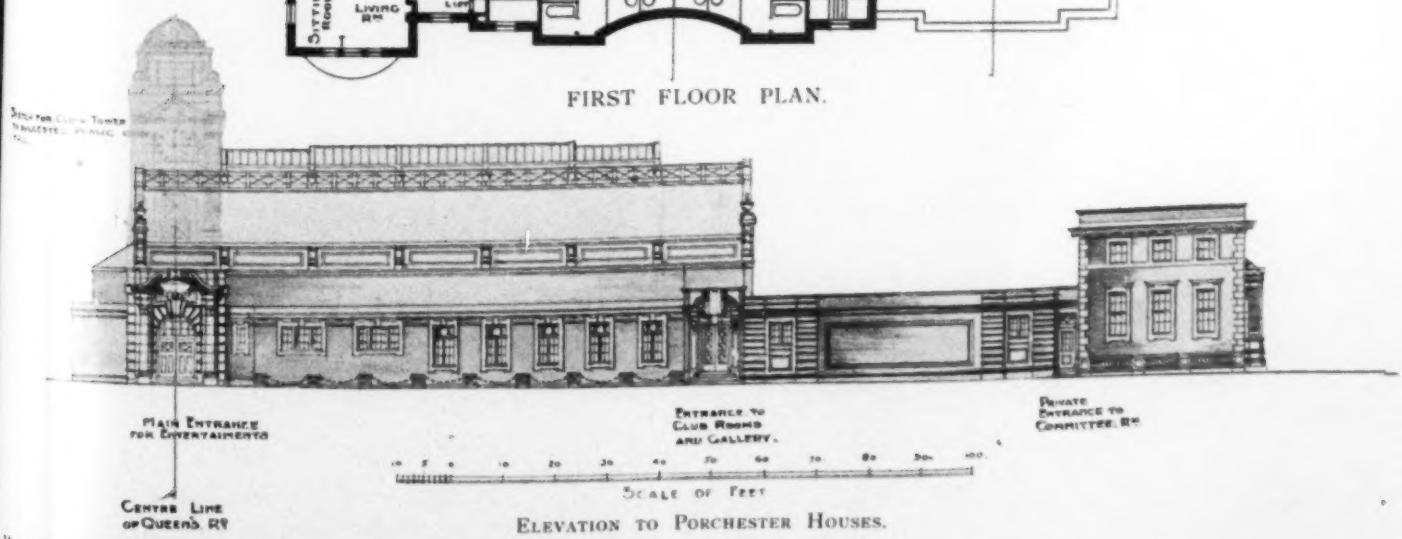


PADDINGTON BATHS: SECOND PREMIA[illegible]

ELEVATION TO PORCHESTER ROAD.



FIRST FLOOR PLAN.


MAIN ENTRANCE FOR ENTERTAINMENTS
CENTRE LINE OF QUEEN'S RY
ENTRANCE TO CLUB ROOMS AND GALLERY.
PRIVATE ENTRANCE TO COMMITTEE Rm
SCALE OF FEET

ELEVATION TO PORCHESTER HOUSES.

MR. HERBERT SHEPHERD, A.R.I.B.A., ARCHITECT.

CONSTRUCTION SECTION.

THE MAPPIN TERRACES, ZOOLOGICAL GARDENS.

THE excellent panorama which is being constructed at the Zoological Gardens has particular interest as providing exceptional constructional features, and as being a novel scheme as far as this country is concerned. It is being carried out in accordance with the wishes of the late Mr. Mappin, who bequeathed a sum to defray all the expenses in connection with the work, and the primary object of the panorama is to provide accommodation for the animals in such a manner that they appear in a more or less natural state with suitable surroundings, thus avoiding the caged appearance, which somewhat detracts from the pleasure of seeing animals in captivity. The scheme has been prepared by Messrs. Belcher & Joass, architects, and their plan is quadrant-shaped, with a radius to the extreme outer edge of about 288 ft.; thus the whole site occupies an area of about 260,000 sq. ft. The general arrangement is shown on the plan illustrated in Fig. 1, and it will be seen that the space allotted to the animals is cut up by three terraces at different levels to permit spectators to have a good view of the enclosures and their occupants, and these terraces are circumferential and connected at the ends by wide flights of steps.

The space adjacent to the centre from which the curved lines of the quadrant are struck will be occupied by a tea-house, and the lower terrace passes round this and separates it from a flamingo pond. Immediately beyond the pond are four enclosures for deer, and these are adjacent to the middle terrace and separated from it by a reinforced-concrete wall, which is sufficiently high to prevent visitors being seen by anyone on the lower terrace, this being necessary to avoid the effect that would otherwise be given of spectators walking about among the animals. On the outer side of the middle terrace are six bear enclosures, and these are separated from the terrace by a wide dry ditch, which is formed to prevent the bears getting out. Each enclosure contains a water-tank in which the animals can disport themselves, and the whole of the enclosure is finished with an undulating surface treated to resemble natural rocky ground with great success. Outside these bear enclosures is the upper terrace which passes along at the foot of the goat hills. The latter are particularly worthy of notice as being the most striking feature of the scheme. They are grouped to form four distinct hills, and they rise up to a height of about 70 ft. from the ground level. Owing to the difficulty of preparing drawings for every conceivable hollow and rise models were prepared for the whole scheme, and detail models to scale were made for each hill for the guidance of the contractors. It will be readily understood that considerable ingenuity had to be exercised in the construction of such irregular shapes, as, owing to the stringent requirements of the L.C.C. it was decided that reinforced concrete was the only material which could be adopted for the work. The patent system of Messrs. D. G. Somerville & Co., Ltd., 120, Victoria-street, was selected for the whole of the reinforced concrete in the scheme, and this has been found very satisfactory. The irregular outline of the hills and bear enclosures is shown in the sections, Figs. 2, 3, and 4, and it will be observed that the design of the bracing under the former was somewhat difficult owing to the unusual contour. At the same time the hills required to be very rigid on account of their height, and the dead load and wind pressure combined produce a considerable stress. The actual hills do not commence until the level of the upper terrace is reached, a height of about 17 ft. above the ground level, and below this the construction consists of several rows of columns, radial and circumferential, to the outer edge. There are twenty-six radial lines, and these columns are 10 in. or 13 in. square, reinforced with four vertical bars, ¾ in. diameter, bound with links at 6-in. pitch. The foundation to each column consists of a slab 2 ft. 9 in. square, at a depth of 2 ft. below the surface level, the slab having a minimum thickness of 9 in. at the outer edges increased to 18 in. thick at the intersection with the column shaft. Radial and tangential beams are provided at the heads of the columns to bind the whole together, and these vary from 9 in. by 6 in. to 14 in. by 9 in., according to the position and load to be carried. The construction adopted under the third goat hill is somewhat different to that employed elsewhere, as it was decided to construct a large open space at this point which could be utilised as a hall for lectures and similar purposes, and the intermediate columns were omitted and only two rows retained, while large trussed reinforced members, having a span of about 42 ft., were formed to carry the work above, as shown in Fig. 4. All the columns and braces above the

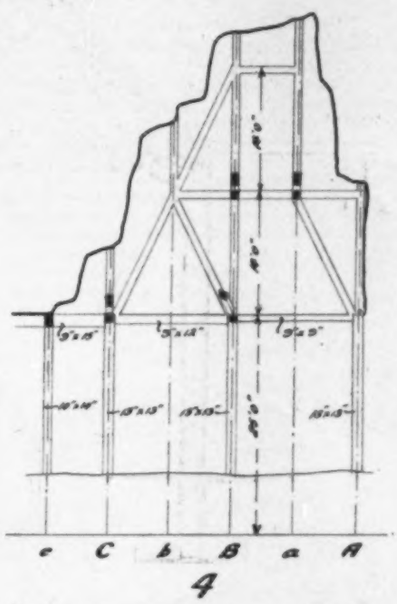


Fig. 2. The Mappin Terraces: Bracing to Goat Hills.

level of the base of the hills are 9 in. by 9 in., and these are reinforced with four ½-in. bars and links at 12-in. centres. A large water-tank is provided under the second hill, and this is utilised to fill the ponds in the bear enclosures in an ingenious manner. The rain-water from the goat hills is collected and taken to this tank, and a main is carried to the ponds in such a manner that the latter can be filled rapidly, and the overflow from the tank is connected to this main, and thus all the water passes through the bear ponds, and the tank is kept constantly full. This is an improvement on the usual system by which the ponds are supplied, as the emptying and refilling usually occupies a considerable time. The tank has a mean width of 30 ft., a length of 32 ft., and is 3 ft. 9 in. deep. The bottom and sides are formed with 5-in. reinforced slabs carried on 14-in. by 9-in. main beams, and 9-in. by 6-in. secondary beams reinforced generally with four ½-in. bars and ⅜-in. stirrups. The hills are covered by continuous slabs, having a minimum thickness of 3 in., and these are constructed with two layers of wire netting spaced at the distance apart required for the thickness, the concrete was rammed between these two layers, causing the fine stuff to project through the holes in the netting, and, in addition, the effect of the ramming was to cause the netting to bulge and so produce an irregular surface, which was desirable. The outer surface was then brushed with a stiff broom, causing the fine projecting stuff to spread over and cover the netting; thus a good surface was produced, sufficiently rough to permit the goats to climb. The outer surface is also reinforced by the netting, which is additional to the main reinforcement of the slab itself. The effect of the treatment is successful, as the appearance is very natural, and, when weathered and toned down in the course of time, visitors will hardly realise that the hills are artificial. In order to induce the goats to climb the hills, and come well into the view of visitors below, feeding-holes are formed at the top, and ladders are provided in the interior of the hills for the keeper to pass up with the food. A safety railing is fixed on the outside of the hills at a suitable distance from the top to prevent goats from falling or being butted over on to the

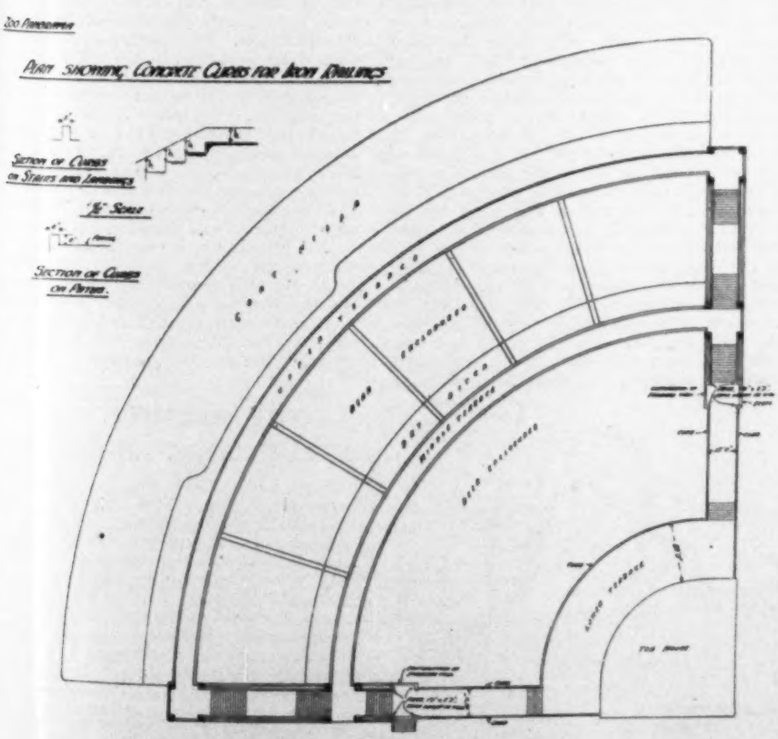


Fig. 1. The Mappin Terraces: General Plan.

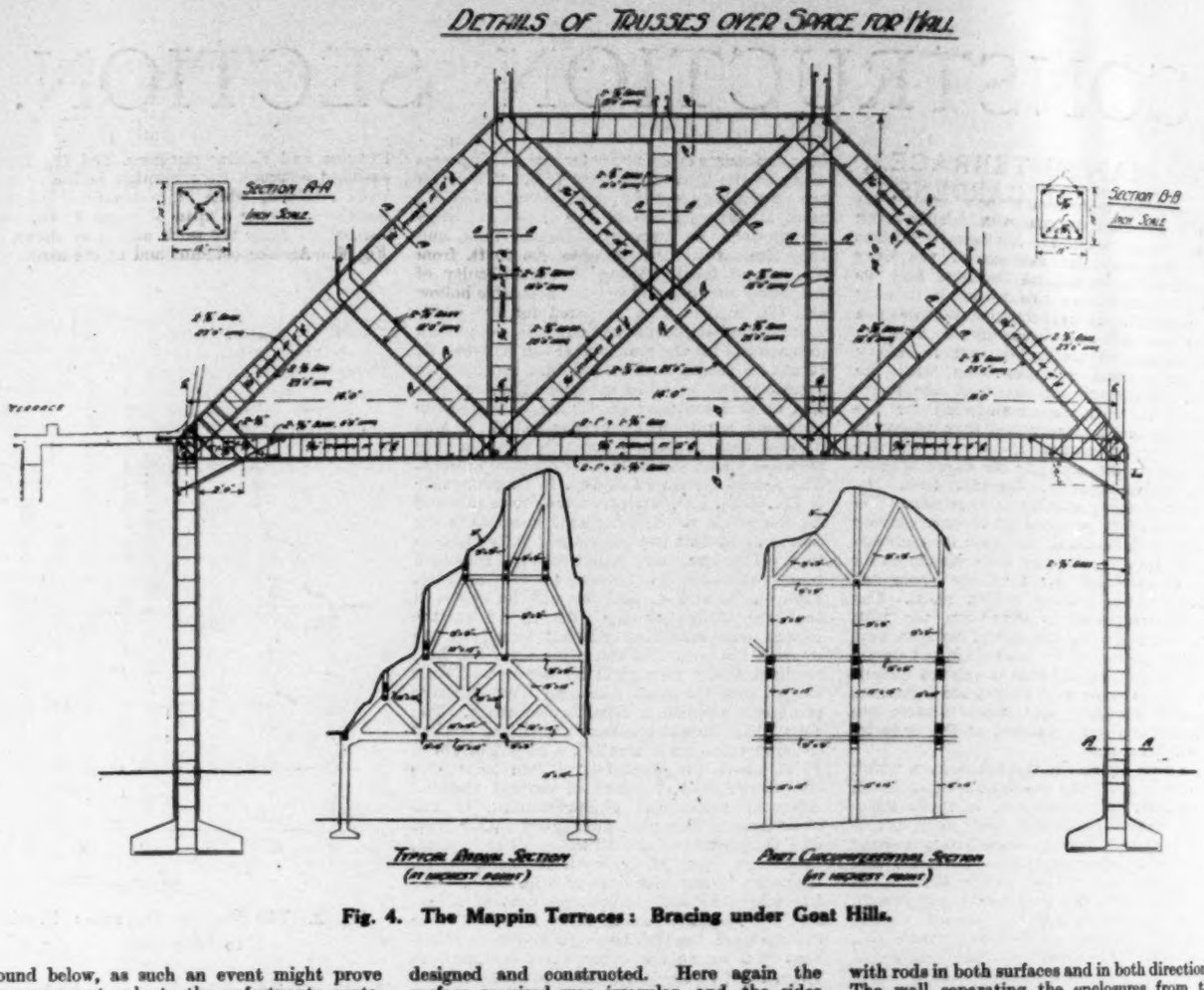


Fig. 4. The Mappin Terraces: Bracing under Goat Hills.

ground below, as such an event might prove dangerous, not only to the unfortunate goats, but also to any visitors who happened to be passing along at the moment.

In the design and construction of the bear enclosures great care had to be exercised in order to prevent any projections which would enable the bears to climb up the walls and escape. The enclosures are separated from each other by high division walls, formed with concrete left with a rough surface as it came away from the centering. A rustic effect was obtained by using wire netting instead of boarding, thus allowing the concrete to bulge outwards. The surface of each enclosure is formed with reinforced concrete varying from 5 in. to 7 in., the reinforcement consisting generally of ½-in. bars at 10-in. centres in one direction, and ½-in. bars at about 3½-in. centres in the opposite direction. Owing to the irregular nature of the slabs it was not possible to form ordinary beams, and, in consequence, these were formed in the same thickness, and have the same irregular line as the slabs, and they consist of additional bars introduced between the columns in both directions, and spaced over a width of about 2 ft. 6 in. Some of the slab reinforcement is turned up and passed over these beams to provide continuity and stirrups were also introduced. The columns supporting these beams and slabs required to be of different heights to suit the irregular lines, and the undulations were partly formed by using planking and wire netting for the centering, the latter being allowed to sag.

The ponds formed in these enclosures are remarkable examples of reinforced-concrete work, and form admirable specimens of the possibilities of this material when properly designed and constructed. Here again the surface required was irregular, and the sides and bottom could not be constructed with ordinary beams and slabs, as they form what are literally "pockets" in the surface of the main concrete, and as such they are suspended from the columns and main slabbing. No special precautions were taken to render the work watertight, and yet there is no sign of leakage or percolation through the concrete, while it must be borne in mind that the tamping was very difficult owing to the nature of the centering, which was composed of boards laid at some distance apart, with wire-netting stretched between, with the consequence that sagging occurred. There is one pond in each enclosure; those in the eastern and southern divisions, which will be occupied by the polar bears, have a maximum length of about 40 ft. and a width of about 17 ft., with a depth of 6 ft. of water. An interesting feature is provided by the four observation windows, which are formed at one end of this pond for the purpose of noting the movements of the bears when under water. These windows are 2 ft. by 1 ft. 6 in., and they are situated in the lower part of the end enclosure wall against which the pond is constructed. The dens for the bears are constructed under the upper terrace, and they are each about 12 ft. by 6 ft. and 6 ft. 6 in. high, with floors, walls, and roof of reinforced concrete, 5 in. and 6 in. in thickness, with rods in both surfaces and in both directions. The wall separating the enclosures from the upper terrace is carried above the terrace level for a height of about 7 ft. to prevent visitors being seen by spectators on the lower terraces, and openings filled in with bars are formed in the wall to allow a view of the animals from this terrace.

The staircases are 14 ft. wide, and are constructed of concrete reinforced with bars in the soffits both longitudinally and transversely, and, in addition, an intermediate transverse beam is formed on the underside in the centre of each flight. The landings are built with 5-in. slabs reinforced in the soffits by bars in both directions, and the bars in the flights are carried well into the concrete composing the landings. The whole of the concrete was mixed by machinery, and the proportions adopted generally are 1:2:4. In some cases, however, a slightly richer mixture was employed where a stronger material was desirable.

The scheme is quite unique in this country, and a great deal of consideration was required in the planning and construction in order to achieve the success that has been attained, while there is possibly no better example of construction to illustrate the adaptability of reinforced concrete to be found. The consulting engineer for the scheme was Mr. Alexander Drew, of No. 64, Victoria-street, Westminster.

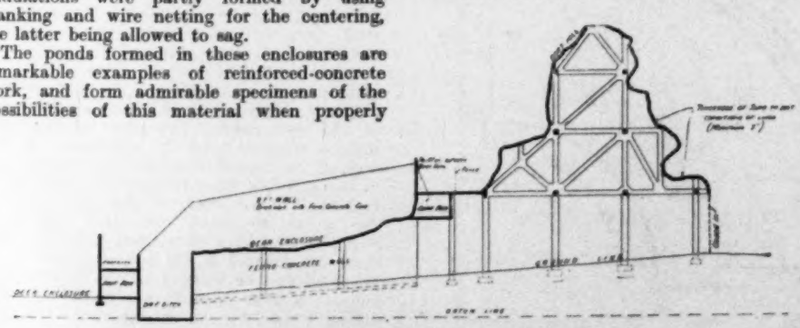


Fig. 3. The Mappin Terraces: Cross-Section.

THE ARCHITECT AND STRUCTURAL ENGINEERING.*

THE author said that an architect was necessarily a structural engineer, with the addition of the artistic sense and skill to clothe the structural forms with beauty of line and contour, and to so arrange mass and void into one harmonious whole, studying the great lessons of the past, and carrying on the architectural conditions of ancient Greece and Rome, down through the Middle Ages and on through the Renaissance. He thought all would agree that the architects of such buildings as the

* Summary of paper read at the forty-ninth ordinary general meeting of the Concrete Institute on Thursday, April 23, at Denison House, Westminster, S.W., by Mr. William E. A. Brown, A.R.I.B.A., M.C.I.

Church of Santa Sophia at Constantinople; St. Peter's at Rome; the Pantheon, Rome; the Duomo of Florence; and, to come down to more recent time, Sir Christopher Wren's masterpiece in London, and Bentley's last great work of Westminster Cathedral, were structural engineers.

Were not all our cathedrals, which were the delight of artists and lovers of the beautiful, wonderful examples of architects' engineering skill? Majestic buildings with vaulted roofs poised on slender pillars, and held in position by flying buttresses, each thrust met by a counter-thrust, all combined so as to keep the whole structure in a stable condition.

Structural engineering included not only steelwork used in buildings, but also all forms of construction, whether in brick, stone, timber, or concrete, and in designing buildings and other structures the architect was called upon not only to exercise his artistic ability, but also so to plan and arrange the various materials to carry safely, in addition to their own weight, all superimposed loads and external forces so that the whole might remain perfectly stable.

No doubt the Council of this Institute had this in mind when it was decided to enlarge the scope of the Institute by adding structural engineering, and not to confine itself to one branch only—*i.e.*, concrete and reinforced concrete. The wisdom of this, he thought, was manifest by the large increase in the membership as well as by the greater attendance at the meetings.

It was the architect and the architect alone who should determine the position of all main girders, stanchions, and supports. In many buildings it was impossible to proceed with the design until these positions were determined. In some cases it was the run from north to south or east to west. In others it would be such a feature as a dome; for example, how could Wren have planned St. Paul's unless he knew beforehand how he was going to support that great and glorious crowning feature of his design? That building could not have been erected had Wren simply made a drawing and handed over the structural work to someone else to deal with, or, had that course been adopted, the resulting design would have been different to that made by the architect.

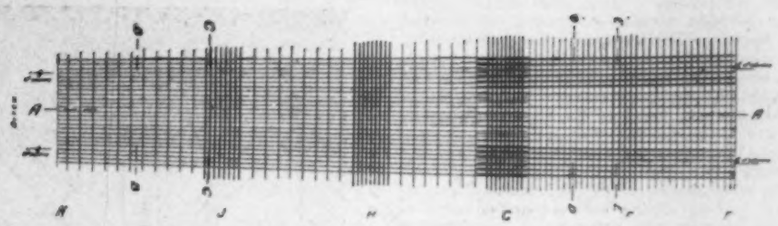


Fig. 6. The Mappin Terraces: Plan of Reinforcement to Bear Enclosure Slabs. (*See page* 617.)

There was no doubt that tradesmen and others who did not realise the importance of having a properly-qualified professional man to advise them were led to believe and fondly imagined that they were saving a large sum in fees until they found by experience that their folly had cost them more. It was not his intention or wish to belittle in any way the status of the consulting engineer, as he occupied a very important position in the building world. But what he did wish to emphasise was that it was the architect's duty to determine the position of all girders and supports in the buildings he designed. He should also be able to make the necessary calculations for the steelwork in, at any rate, the smaller buildings under his control. Architects often did employ consulting engineers to do the calculations for the steelwork—first, for lack of time to do so themselves, and often because in some modern buildings the steelwork was of so complicated a character that it was advisable and necessary to do so; but that did not alter the question of the position of the architect in the matter.

A good deal of stress had been laid upon the question of whether the steelwork should be designed and quantities taken out by the consulting engineer before being sent to the constructional firms for estimates, or whether these firms should be allowed to do the calculations themselves. For contracts involving a

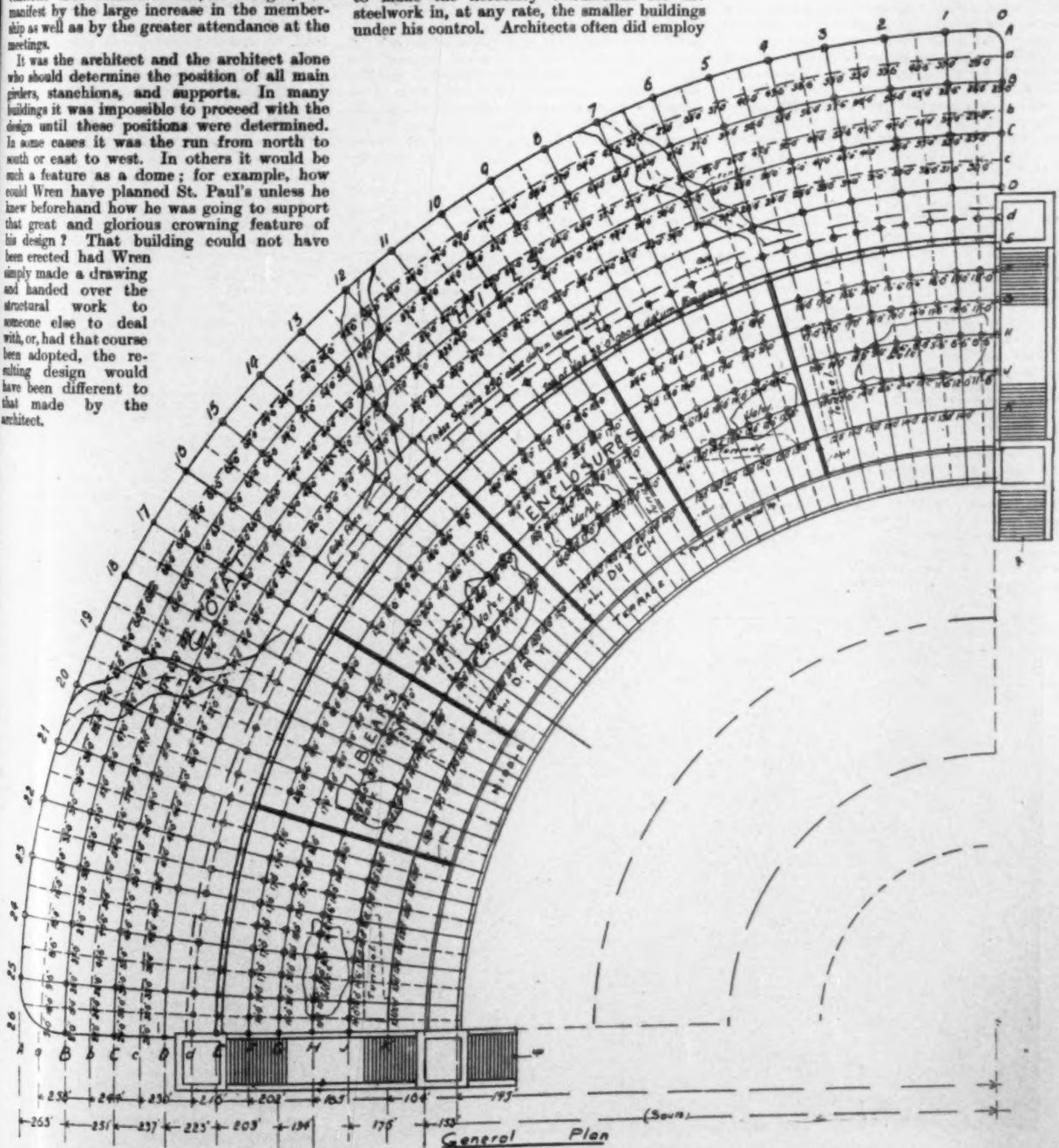


Fig. 5. The Mappin Terraces: Plan of Columns and Beams. (*See page* 617.)

large amount of steelwork of a complicated character the author agreed that a consulting engineer should be appointed by the architect, but there were many smaller works where this was not necessary, nor would the outlay on the building work warrant the expense incurred. It was quite satisfactory, given certain conditions laid down, for the architect to send the drawings to several firms of engineers and let them make their own calculations and quantities; but to enable the various contractors to estimate on the same basis the following information must be given to each :—

1. Plans of all floors showing the lines of all main girders and the positions of stanchions and columns; also a section or sections and outline elevations must be given.

2. The loads that each floor had to carry and whether live or total loads.

3. Whether British or foreign steel was to be used, and whether the London County Council Regulations under the General Powers Act, 1909, were to be complied with. If not, the stresses should be specified that were to be worked to.

4. Whether price was to include for hoisting and fixing or only for steelwork delivered to site.

5. If it was to be delivered unpainted, painted, or oiled, and, if painted, with what materials, and that all scale and rust must first be removed.

6. Workmanship, whether connections were to be riveted or bolted, and if the latter whether ordinary bolts would be allowed.

7. Whether the price was to include 10 per cent. profit for the builders or only 2½ per cent. cash discount.

The author's practice was to state the latter.

There was a diversity of opinion as to whether dead loads and superloads on a floor should be kept separate in making the calculations, or whether a load to include the dead weight of the floor itself should be taken. The author's practice was to work to the latter, as the calculations were much simpler and the liability of error was materially reduced.

One must, of course, take into consideration the point loads which often occurred from partitions, etc. This was often neglected by competing firms of engineers, but some of the concrete partition blocks on the market weighed a considerable amount, and one was often surprised when the weight was calculated out.

Another matter that he sometimes had to argue with the steel contractors was the central loading on girders carrying walls with openings and narrow piers between. Some assumed that the loads were evenly distributed over the span through the brickwork below the window-sills. If the sills are very high up this may be so, but in many cases the sills are only 12 in. or 18 in. above the girder, and, in his opinion, the loading in such a case should be considered as a point load, or as a distributed load over a length of the girder equal to the width of the pier.

In calculating the loads on stanchions, etc., he did not take advantage of the reductions allowed by the 1909 Act. He did not think it advisable, as buildings were often loaded to a greater extent than was allowed for. How often was an architect told that the floors will never have to carry more than a certain weight, and, on going over the premises, when occupied, he is surprised to find these loads greatly exceeded.

When the various estimates and plans showing the steelwork were received the architect should carefully go through each set and compare the sections of the girders, etc., and make rough calculations to check the sizes and ascertain if the allowable stresses had been adhered to. It was also necessary to check the depths of the joists in relation to the span, otherwise undue deflection might occur.

After the plans had been gone through the architect was in a position to determine which estimate he would accept, and, when giving the general contractor instructions to accept the estimate it was important to state that all dimensions were to be taken from the site, and that the whole of the work was to be carried out to the architect's satisfaction, detail drawings of all parts to be submitted to him for approval. The steel contractor must take his own dimensions from the site, arranging, of course, for the general foreman which portions of the steelwork were to be delivered first and the order of delivery of the remaining consignments. When the cleared site had been measured with steel tapes and all angles carefully triangulated it should be possible for engineers to set out and scale off the lengths of the various parts. The connections and workmanship were, in the author's opinion, very important matters to be considered, and, as far as his experience went, they did not always receive the attention that should be given them. Of what use was it to have a strong joist or stanchion if the cleats under the joist, or the joists under the stanchion, were not properly designed, or, if the design is correct, the connections themselves were badly made? It was a regular practice to use ordinary

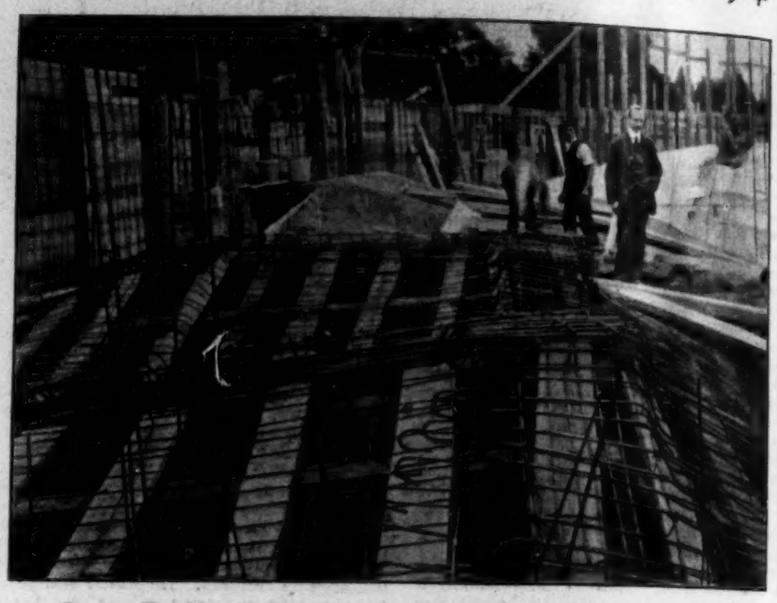


Fig. 9. The Mappin Terraces: Reinforcement in Position. (*See page* 617.)

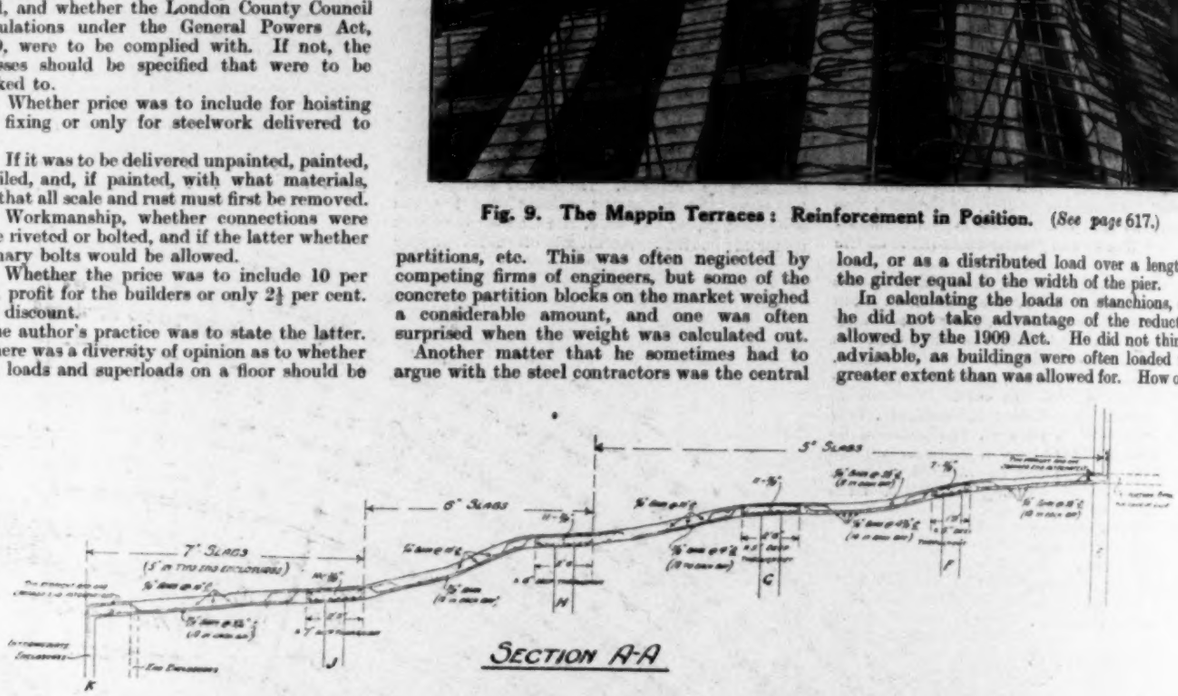


Fig. 7. The Mappin Terraces: Reinforced Slab in Bear Enclosures. (*See page* 617.)

Fig. 8. The Mappin Terraces: View of Bracing to Goat Hills. (*See page* 617.)

bolts to take shear, such as the ordinary ¾-in. bolt in a 1¼-in. hole, the shank being threaded to within ¾ in. of the head. He had examined connections made in this way, and often out of five bolts in the connection four of them could be taken out with the fingers when the nut was removed. What amount of bearing area did one get on the threaded end of the bolt, supposing that the bolt was bearing on the plates? The bearing surface consists only of a series of knife-edges. If bolts must be used in shear, then the holes must be carefully drilled concentric through all the plates without the usual amount of clearance, and bolts with plain shanks long enough to pass right through all of the plates should be driven in. In order to make sure of having no portion of the threaded end bearing on the outer plate a ¾-in. washer should be placed under the nut. The author was aware that the 1909 Act says that rivets should be used in all cases where reasonably practicable, but there were a very large number of buildings to which this Act did not apply. He thought that all steelwork should be designed in accordance with the provisions of the 1909 Act, but that the conditions for bolted work should be simplified in the Act, the only requirement now being that the bolt should extend through the nut, and the latter be secured so as to avoid risk of becoming loose. Another important point, and one that was not always attended to, was that all holes through two or more thicknesses of metal should exactly coincide. If they did not coincide, how could the rivets or bolts take a proper bearing and transmit the loads from one to the other?

Filler joists in concrete floors should be bolted or cleated at least every third joist to the main beams. He had seen cases in which this was not done, but the fillers simply rested on short cleats on beams connected to stanchions running through three floors, next the street, and with no other tie than that afforded by two ¾-in. bolts at each floor level; the end stanchion, built on the face of the party wall, with only 4½-in. brick casing round it, was not tied in at all. He believed it was becoming a common practice to place the smaller filler joists on a concrete haunching resting on the bottom flange of the main girder, and not tied in any way to the girder. In his opinion this method of construction should be condemned. The area of the stanchion bases should be checked to see if the concrete was not loaded more than 12 tons to the square foot. Large gusset plates should not be allowed unless properly stiffened to prevent buckling. It was a good practice to encase the whole of the stanchion base right up to the floor line with concrete. This prevented rusting, and also held the foot of the stanchion firmly in position. He did not advocate the putting of stone templates under stanchions. There was difficulty in bolting both the template and stanchion, and if the latter had to be grouted in the stone might as well be absent. Girders supporting walls as well as main floor girders, if they are formed of two or more plain I-beams side by side, should have plates riveted on top and bottom. To simply bolt them together is, in his opinion, not sufficient, as the load from the main floor girders was not transferred to the outer joists, though some engineers think it is.

Caution must be observed in casing girders and stanchions with patent plasters, especially those that are stated to adhere without the intervention of any lathing. He had one in mind that corroded the steel to an alarming extent in a short time. Stanchions and girders are best encased with fine Portland cement concrete, the steelwork having ½-in. wire wound round same, spaced about 12 in. apart. This held the concrete firmly in position, and it was not easily damaged even by motors.

When he told them that he had seen specialist firms' own men sawing up timber for centering, and the sawdust and shavings and small pieces of wood all left and mixed up with the concrete, he thought one's faith in trusting to such people was rudely shaken. One required a good clerk of works, well up in reinforced-concrete construction, with several smart assistants under him to look after the work.

In calculating the sizes for steel joists embedded in concrete the author's practice was to let the steel carry the load as an independent beam, but taking the depth of the beam anything up to $\frac{1}{18}$ of the span, limiting the stress to 7½ tons per square inch. This was quite enough, and he often found that these small joists, such as 3 in. by 1½ in. and 4½ in. by 1⅝ in., were of foreign make.

He had also a preference for joists with 3-in. flange over those with 1½-in. and 1⅝-in. flanges, for the reason that the concrete had a much better bearing on the joist. He then uttered a warning against using breeze for floors. There was a great danger of expansion, and he knew of several cases where this has occurred and pushed walls several inches out of upright, and even when the wall was rebuilt it happened again. There was also a corrosive action between the concrete and steel, which in time might endanger the stability of the floor. The modern architect had to be a man of many parts, a jack-of-all-trades—a bricklayer, mason, carpenter, joiner, plumber, and painter, always an artist, often a lawyer, and, last but not least, a structural engineer.

EXTENSIONS TO THE BRITISH MUSEUM.

REINFORCED concrete has been largely employed in the new King Edward VII Galleries at the British Museum, which have recently been opened, and the material has proved very suitable for the work on account of its adaptability and fire-resisting qualities.

The new building is about 320 ft. long and 50 ft. wide and 80 ft. high from the street level to the top of the parapet. There are four floors, viz.:—Subground, ground floor, mezzanine, and top floor, the first-named occurring at the entrance level in Montagu-place.

The architect for the building is Dr. John James Burnet, F.R.I.B.A., and the reinforcement was supplied by the Expanded Metal Company, Ltd., of London and West Hartlepool, while Messrs. W. E. Blake, Ltd., of London and Plymouth, were the general contractors. The system of construction employed was that of a steel-framed building with reinforced-concrete floor panels and suspended ceilings. The stanchions are compound steel sections spaced at 16-ft. 8-in. centres longitudinally, and these support main rolled-steel joists, which, in turn, carry the ends of secondary steel joists spaced at 4-ft. 2-in. centres. The width of the building is divided up with two intermediate rows of stanchions, which are spaced to give a central longitudinal bay, 25 ft. 6 in. wide, and two side bays. The stanchions are encased with 9 in. of brickwork, and all the steel joists are protected by concrete, which was formed in the construction of the floors. All the floors are 4 in. thick, and they are reinforced throughout with No. 8 3-in. diamond mesh expanded steel. This reinforcement was laid on the top of the secondary joists, and, as the concrete extended down ½ in. below the top flanges of these joists, the reinforcement is ½ in. from the soffit of the floor slabs. Due consideration was given to the question of sound prevention, and suspended

Fig. 10. The Mappin Terraces: General View of Bear Enclosures. (*See page* 617.)

ceilings were formed to obtain an air space between the rooms above and below. These ceilings were constructed with expanded metal lathing and plaster suspended from the steel joists above by mild steel hangers and clips on the bottom flanges and flat mild steel bars spaced at 12-in. centres. The ceilings in the ground-floor gallery are treated with false beams, sunk panels, etc., and these are formed with flat mild steel bar cradles bent to the required shape and fixed 3 ft. apart to the steel joists above by round steel bars set 12 in. apart along the cradles, and wired to them to act as stiffeners for the expanded metal lathing, which is wired to the rods and around the shaped cradles. The top gallery is roofed with built-up steel trusses, with trimming for sky-lights, and these trusses are encased in reinforced concrete, and the suspended ceiling is curved and ornamented. Several false columns are constructed for the purposes of architectural treatment, and these are built up with small steel angles, riveted together with flat bar rings, and covered with expanded metal lathing wired on and finished with sand and cement in the proportion of 3 to 1, 3 in. thick.

The parapet wall to the Montagu-place front is constructed with reinforced concrete, and the shelving over the radiators in some instances was executed in sand and cement mixed in the proportion of 2½ to 1, and 2 in. thick, reinforced near each surface. These shelves are covered with marble ⅜ in. thick.

The main staircase, which is a feature of the building, is framed up with rolled-steel sections to support the reinforced-concrete filling. The treads and risers were constructed *in situ*, and the concrete is reinforced with 3-in. diamond mesh expanded metal embedded about ½ in. from the soffit, which is flush and finished in Keene's cement. The balustrade is also formed with reinforced concrete, and the whole of the work is faced with marble attached to the concrete. The four steel columns in the staircase and six in the north library are made of steel angles riveted together with flat bar rings filled in solid with, and encased in, reinforced concrete. The concrete throughout was composed of 3½ parts of crushed clinker, 1½ parts of fine clinker, and 1 part of Portland cement.

The floors generally are finished with cork plates and carpets having a minimum thickness of ¼ in., and these are secured down by a special preparation of bitumen laid on sand and cement bedding 2½ in. thick.

THE DESIGN OF STEEL AND REINFORCED-CONCRETE PILLARS, WITH SPECIAL REFERENCE TO SECONDARY AND ACCIDENTAL STRESSES.*

MR. FABER divided his paper into two sections. He first dealt with jointed construction, such as structural steel, and secondly with monolithic construction, such as reinforced concrete. He considered in the first instance the case of a girder resting on the end of a steel stanchion, and stated that in several drawing offices he knew as a fact that the construction in such a case would be treated as centrally loaded. He proceeded to argue that such was not the case, because when a load was applied to the beam it would deflect, and the end originally horizontal would assume a certain slope, and therefore one of two things would happen, namely:—(*a*) The end of the girder would lift, in which case the whole load would be carried on one flange, so causing eccentric loading; or (*b*) the column must be constrained to adapt itself to the slope of the girder, in which case a bending moment would be introduced into the stanchion by such constraint.

In this way he showed that increases in strains of 140 and 480 per cent. respectively were obtainable.

Mr. Faber took secondly for consideration the case of a girder resting on an angle bracket. He argued that if an ordinary bracket were used the action would not be very far from the face of the leg of the angle, since the horizontal leg of the angle would not be strong enough to resist the bending moment which would be produced in it. It followed therefore that, although the horizontal leg of the angle served a useful purpose in connecting the girder to the stanchion, it must not be thought capable of supporting it. In effect the construction became dangerous if the clearing between the face of the stanchion and the edge of the girder exceeded the thickness of the angle.

The author of the paper supposed there were few engineers present who would assert that this limiting clearance was never exceeded in practice, and an engineer had to carefully consider whether it was desirable to employ this type of bracket except for quite small reactions. He next considered a stiffened bracket.

Confining attention to cases where the workmanship was good, he assumed that the stiffening angles had been machined or forged to fit the angle bracket perfectly, and that the bracket was initially horizontal. It, followed that when the girder deflected there was a tendency for it to rest on the outer edge of the bracket, and for very small loads there was no doubt that this actually happened. As the load increased the outer edge of the stiffeners yielded appreciably, and a greater area supported the load, the reaction gradually approaching the face of the column. The author's practice was to make the web of the stiffeners sufficient in area to carry the reaction under a uniform stress of 7½ tons per square inch.

In calculating the resistance he ignored a large area of steel in the flange of the stiffeners, and in the vertical leg of the angle bracket, because (*a*) the clearance between the face of the stanchion and the end of the girder might be sufficient to prevent bearing on this steel; (*b*) even if it was not, this material could not be stressed appreciably until the stiffener webs are greatly overstressed.

In any case the difference in cost between good and bad brackets was an extremely small percentage of the cost of the steelwork, and a smaller one of the cost of the building, and he declined to endanger the "ship" for what in this case might be fairly described as a "ha'porth of tar."

It has long been recognised in good practice that the machining of the ends of stanchions was of the first importance. Yet there were at least two constructional works in London which, with a view to economy, omitted this item of workmanship, and were erecting considerable tonnages of stanchions with the ends left so that the upper tier had contact with the lower tier over the width of one plate only, the remainder of the section having varying clearances often amounting to ½ in. The stress was still gaily calculated as uniformly distributed, and it had been explained to the author that "steel is a ductile material which would yield and flow," and perform other convenient antics, "until the stress was uniformly distributed." The effect of loading such a stanchion was to cause the plates to slide past one another, and to partly shear through the rivets. Even where stanchions are machined a careful engineer must satisfy himself that they were machined truly square. Architects should bear in mind also that, apart from the danger involved in these practices, the yielding of stanchions and brackets before they obtain their bearing involved unknown and unintended stresses on the stonework, and, to the author's knowledge many a beautiful and costly façade and interior decorative work had been badly cracked by bad steelwork details and workmanship.

From the consideration of Case I. it would appear to follow that it was desirable to make these joints somewhat flexible, and occasionally this was so. If buildings were braced with diagonal braces he should say without question that stiffness of connections should be avoided. Unfortunately, such bracing had obvious objections, and the whole stiffness of practical buildings against wind lied in the stiffness between beams and stanchions. There was, therefore, no alternative but to make the joints stiff and to make the necessary allowance for these secondary stresses in the design of stanchions. This might be onerous, both in requiring extra labour and an increase in material, but a conscientious engineer would grudge neither the one nor the other.

Mr. Faber then dealt with the design of cleats. A common method of calculating the safe reaction of a cleat was to take it as the sum of the resistances of the rivets, the effect being to neglect the very appreciable stress due to bending.

Dealing with the bracing of pillars, Mr. Faber said that it was well known that pillars fail by buckling and that their stress was to be determined with reference to their length. This phenomenon was fairly well understood, and there are sufficient experimental data available to make the design of pillars, with reference to what he might call primary buckling, a comparatively simple matter. The phenomenon to which he referred was that of secondary buckling, in which the pillars, instead of buckling as a whole, fails by the individual buckling of its component members. On this subject there appeared to be practically no experimental data and practically no formulæ or rules for the guidance of a designer. The importance of this problem might be gathered from the fact that bad design in the matter of bracing in pillars was certainly responsible for the two greatest failures in recent years—the Quebec Bridge in 1907 and the gasholder in Hamburg.

Mr. Faber then proceeded to the second portion of his paper, treating of monolithic construction and the eccentricity of beam reactions on pillars therein. Whereas in steel construction the eccentricity was very definite and easily calculated with most common types of brackets, with reinforced concrete the eccentricity could only be calculated from considerations of elastic flexure, and the problem was a much more difficult one. There was, however, no longer any excuse for claiming ambiguity, since the problem had been analysed very completely in "Reinforced Concrete Design" and numerical examples fully worked out.

The author took as an example the case of the outside column of a building, working it out in detail, and showing very great increases in stress over the values as ordinarily calculated. If thoughts of eccentricity were banished, either from ignorance or under stress of competition, the actual maximum stress would have been 1,300 lb. per square inch.

It is interesting to note that the outside pillar in good design did not suffer much reduction in size up through the last three tiers. This was in accordance with the best practice in steel-frame buildings.

In conclusion, Mr. Faber said that, without suggesting for a moment that the engineering staffs of several constructional firms were not fully as efficient as many consulting engineers, he did feel that the system of competitive designs and lump sum prices penalised good designing by such firms, and secured the work to those responsible for the most risky designs. The only correct system, in his opinion, was for the architect to entrust the design to an engineer who had his confidence, and to invite tenders on the design which he prepared. The architect and building owner were then likely to obtain a sound construction, and if they used their discretion in the choice of the engineer the work would not cost more than the minimum consistent with safety.

The best constructional firms would be guarded by being protected from competition with weak design and bad workmanship, and he might state that, in dealing with tenders, he considered that an engineer should give preference to those firms whose detailing and workmanship he knew he could rely upon. He urged this in the interest of the building owner, knowing as he did the importance of good details and good workmanship. The only man to suffer was the man who would take great risks and do inferior work in order to secure a contract, and he could not say that he had much sympathy with him.

* Summary of a paper read before the Concrete Institute at the fortieth ordinary general meeting on April 16, by Mr. Oscar Faber, B.Sc., Assoc.M.Inst.C.E., M.C.I.

CONSTRUCTION NOTE.

Boston's New Dry Dock.

AT a recent hearing to determine the advisability of using concrete for the immense new dry dock, forming part of Boston's port development, photographs of reinforced concrete piers, built by the Aberthaw Construction Company in 1909, formed one of the determining features. These photographs showed that with proper mixing and treatment the combined chemical and frost action of sea water could be neutralised even when the material was subjected to alternate immersion in the water and exposure to the air. The decision was to build of reinforced concrete with wearing surfaces or altars of granite.

THE BUILDING TRADE.

COLONIAL BUILDERS' ASSOCIATIONS.

THE Master Builders' Association of New South Wales sends us its Report for the year ending January, 1914, from which it appears that the industry in Sydney has been active and prosperous during 1913.

The number of buildings actually completed in that year was 9,284, at a capital outlay of £6,371,671, as compared with 8,862 in 1912, at an outlay of £5,432,734, and 6,752 in 1911, at an outlay of £3,825,182.

The shortage of labour, however, was such that the Association found it necessary to co-operate with other employers' associations in setting up an Employers' Industrial Labour Office, with the object of securing labour by means of immigration. This organisation has established agencies in all the principal cities of the United Kingdom, a proceeding which employers here may view with some disfavour having regard to the evidence they already have that a shortage of labour here is imminent also.

The tendency to increase the height of buildings, so marked in all great cities on account of the increasing value of sites and the increased taxation, is noted. Buildings in Sydney are limited by law to a height of 150 ft. above the footpath, and those above 100 ft. in height have to be provided with fire-escapes, independent staircases, duplicate lifts, and so on.

Complaint is made that the building by-laws need revision in the matter of the thickness of the walls of such buildings and in allowing freedom in the use of modern systems of construction. The Association is trying to bring this reform about.

It sounds strange to read in the Report that the City Council has been continuing the work previously commenced in improving the city and demolishing slum areas, and has also started the erection of workmen's flats to provide housing accommodation for the people driven out of the slums. One would have thought Australian cities were too young to have developed extensive slum areas.

There seems as much difficulty in getting town-planning and traffic problems tackled there as here, for the Report goes on to say that there is still an absence of any definite or settled plan for the future improvement of the city, and it still waits anxiously for improved means of communication and better transit facilities within itself and to the suburbs.

The infatuation which from time to time induces public authorities in this country to go in for works departments and the direct employment of labour prevails in Australia too. Under the State Labour Government the policy adopted is to carry out public works on the day-labour system, with occasional resort to tendering, for the purpose of pitting the Works Department against the builders and contractors, and so getting, at the expense of the latter, if they are foolish enough to tender, a check upon the working methods of the former.

The results of the Works Department there are similar to the results here, as might be expected, viz., an excessive cost of execution. In an example quoted in the Report, and relating to two similar schools, the one built by the Works Department cost 61 per cent. more than the one built under contract.

Yet one sees in certain organs of the daily Press in London regrets expressed that the London County Council did away with its costly Works Department and a desire indicated that it should be resuscitated.

There is a movement on foot in Sydney to negotiate an improved form of contract. Reading between the lines of the Report one senses that the negotiating parties each set out to draw up a form embodying their views, and now find it a more lengthy and difficult task to reconcile their divergencies than was expected.

Industrial arbitration bulks largely in the Report, and appears to consume an amount of the time of those who resort to it that would be resented in this country. For instance, the Carpenters' Board started sitting in April and an award was only reached in September. The Plumbers' Board and the Builders' Labourers' Board started sitting in the beginning of the year, and in the latter case the award was not made until November, and then it was appealed against.

It is not to be wondered at, therefore, that employers and workmen have been making during the year earnest efforts to settle industrial troubles by means of conciliation in preference to the expensive and long-winded methods of compulsory arbitration, and with encouraging success, for the Report says: "Judging by the results of these conferences, these Conciliation Committees should be productive of much good, and do a great deal towards breaking down that feeling of antagonism between employers and employees that appears to have arisen during the last few years; in any event, they must be a strong factor towards the preservation of industrial peace."

This is precisely what they have proved to be here in the country generally, so far as the building trades are concerned, with the exception of London, an exception which indeed proves the rule, since London has a strictly limited local system of conciliation, whereas the provinces have a nationalised system, and good judges are of the opinion that had the London building trade been parties to the national schemes of conciliation the present dispute and the recent dispute with the plasterers would have been satisfactorily adjusted without the lengthy cessations of work which have occurred.

The question of apprentices is of pressing importance in Australia, as it is here, and a movement is on foot for increasing the rates of wages paid to them.

In this connection it might be worth the while of our Colonial brethren in the building trade to consider the scheme that is being started in the North of England whereby the apprentices are taken on at seventeen years of age instead of fourteen years, their wages started at 10s. a week, increasing to 25s. in the last year. This should make apprenticeship more attractive and the youths more efficient, while it affords a valuable outlet to those boys whose parents have been constrained through hard necessity to put them to blind-alley occupations at fourteen years of age on account of the large wages paid in such.

In this short review of the activities of builders at the Antipodes it is interesting to see that in their new country, as in this old one, much the same problems have to be met and dealt with, and useful lessons for them and for us may be drawn from our respective experiences. On the whole we may be pardoned for thinking that the methods of dealing with those questions which have been elaborated here are at least as practical and efficient as those hitherto tried in Australia. Our form of contract for use in the building trade, if not all we could wish, yet works fairly well, and with slight amendment may sufficiently meet all requirements. Our methods of conciliation, which entirely avoid compulsory arbitration, have proved their efficiency for a good many years, and are yearly being improved in the light of experience and rendered more satisfactory, especially in the direction of speeding up the settlement of disputes, and they are marvellously cheap. Our traffic problems, though far from solved, have been much alleviated in recent years, and the ease of getting about this great London of ours is immensely greater than it was a few years ago.

The possession of such common problems is another link to the many which bind together the Mother Country and her Colonies and ensure to her children away in far Australia a sympathetic and kindly interest in their problems.

BUSINESS PREMISES, PRINCES-STREET, W.

The old buildings at 3, Princes-street, Hanover-square, W., are being demolished by Messrs. Sabey & Co., Willesden-lane, N.W., and in due course business premises will be erected on the site. The architect is Mr. E. Keynes Purchase, F.R.I.B.A., Maddox-street, Regent-street, W., and the general contractors are Messrs. Bovis, Ltd., Upper Berkeley-street, Portman-square, W.

THE LONDON DISPUTE.

THE present is a critical time in the history of this dispute, and grave issues hang upon the acts and words this week of the leaders and rank and file of the trade unions involved in the dispute.

The negotiations between the employers and the operatives which have taken place within recent days resulted in a substantial agreement between those present, and a set of proposals, considerably modified from those previously rejected, were taken back by the operative representatives for recommendation to their members.

No official details have been published, but that is immaterial; the important point is that a series of recommendations, made unanimously by a National Conciliation Board representative of the trades involved in the dispute, and subsequently substantially modified by mutual concession and negotiation, are now to be balloted upon by the men, and that upon the result depends whether there is to be peace or a continuance of the present war between the parties, but upon a vastly larger scale.

The resolution of the Executive of the National Federation of Building Trades Employers to recommend a general lock-out in support of London, if the dispute is not settled within a limited time, was not lightly taken, and will unquestionably be acted upon if the result of the present ballot renders it necessary.

At present the London employers are fighting not only those local unions with whom they had agreements, but are contending also against those provincial unions which are providing the financial sinews of war to enable their brethren in London to continue the struggle. It was to deal with situations such as this that the Employers' National Organisation came into being, and it is bound to take action in support of the London employers when negotiation fails.

Unfortunately, the struggle, once it becomes national in the building trade, may spread to other industries, because a similar process of financial assistance by the trade unions in other industries will ensue, and is bound to provoke a similar response from the employers of those industries, and so, just as the National Federation of Building Trades Employers and the general unions of the operatives who are at peace and have been good friends for years are likely to become involved in the London labour war, so in their turn other industries are likely to become involved once the dispute attains national dimensions.

It is plain, therefore, that the present is a critical time, and that much hangs upon the conduct of the local operatives this week and upon the votes they give.

Let them, therefore, ask themselves seriously whether they are justified by the facts of the case in rejecting these proposals, which are the result of such prolonged negotiations, thereby involving the rest of the building trade in an upheaval of which none can see the end.

THE INTERNATIONAL FEDERATION OF BUILDING AND PUBLIC WORKS CONTRACTORS.

IT appears from the Report, presented to recent meetings of the Executive Council of this international employers' organisation by its able director, Mr. Van Opheim, that good progress is being made in obtaining the adhesion of the building trade employers' associations of the various countries. Since the Congress at Rome the national federations of the United Kingdom, of the German Empire, and of Poland have joined the International Federation, and the adhesions of Denmark, Sweden, and Norway are expected at the approaching Congress at Berne.

Communications have been opened up with the United States, and a collective tour there is being arranged for, which it is hoped will stimulate further the national concentration of the present State organisations in America

already begun, and bring in important adhesions to the International.

It is to be expected, therefore, that ere long the building trade throughout Europe and America will be so knit together through the intermediary of the International Federation as to be able, by the facilities so provided for the exchange of ideas and information and by the lines of common policy which are agreed upon at the international congresses, to render real and valuable services to the building industry, and lift it socially and technically to the position which its importance and influence upon the public health and happiness entitle it to occupy.

The meetings were held at Amsterdam, The Hague, and Paris from May 4 to 7. The English delegation consisted of the President of the National Federation of Building Trade Employers (Mr. Thomas), the President of the Institute of Builders (Mr. F. G. Rice), and the Secretary of the National Federation (Mr. A. G. White).

The members of the Executive Council were the guests of the Dutch Federation of Building Trade Employers, and were looked after from start to finish by the Dutch employers with a hearty, kindly, and generous hospitality which was highly appreciated by the recipients.

The principal questions which will be under discussion at the forthcoming Congress in August at Berne will be:—Collective Working-Rule Agreements; Professional Training for the Building Trades; Strikes and Lock-outs, including the organisation of employers and the best means of settling disputes; Scaffoldings and Hoardings: their construction from the technical point of view and from the point of view of preventing accidents to workmen.

Recent events have roused a keen interest in these questions, and the building trade is likely to look forward expectantly to the coming Congress to give a useful lead as to the policy to be pursued by employers in the immediate future.

It will be remembered that a few years ago the Belgian builders visited England and were entertained at Liverpool, Sheffield, and London. When the Antwerp builders heard that Mr. F. G. Rice, who, as President of the London Master Builders' Association, on that occasion welcomed the Belgians, was attending the international meetings, they pressed him and his colleagues to break their journey and spend a day or two at Antwerp, where they showed by their great kindness and hospitality that the friendship which was kindled by their visit to this country is still warm and strong.

Indeed it must be apparent that not the least valuable work which International Federation can do for us is to foster that mutual knowledge and understanding which is the true basis of friendship between both nations and individuals and the soundest way of promoting that peace and amity between the European nations upon which so much depends.

APPLICATIONS UNDER LONDON BUILDING ACTS, 1894 to 1909.

THE Building Acts Committee of the London County Council have consented to the following applications under the London Building Acts:—

Lines of Frontage and Projections.

Brixton.—Addition to the Stockwell Brewery, Stockwell-green, Stockwell (Messrs. W. Bradford & Sons for Messrs. C. Hammerton & Co., Ltd.).

Lewisham.—Erection of houses on the southern side of Stanstead-road, Lewisham (Messrs. Norfolk & Prior for Mr. J. Hughes).

Lewisham.—Erection of wood and glass hoods to houses on the northern and southern sides of a new road leading from Burnt Ash-hill to Manor-lane, Lee, and to five houses on the eastern side of Manor-lane (Messrs. G. Lansdown & Brown for Messrs. W. J. Scudamore & Sons).

Norwood.—Erection of a building on the north-western side of Cambria-road, Camberwell (Mr. E. J. Hammond for Mr. W. H. Hill).

Wandsworth.—Bay-windows, porches, oriels, and gables to forty-four houses in Cricklade-avenue, Streatham, between Emsworth-road and Faygate-road (Mr. J. Copp).

Westminster.—Projecting one-story shop at No. 139, Victoria-street, Westminster (Mr. L. Martin for Mr. H. Attenborough).

Width of Way.

Hammersmith.—Re-erection of No. 148, King-street, Hammersmith (Mr. H. Mair for the Hammersmith Metropolitan Borough Council).

Kensington, North.—Additions and a porch at St. Mark's Institute, St. Mark's-road, Notting Hill (Mr. G. H. Sothcott for the vicar and churchwardens of St. Mark's Church).

Width of Way and Line of Frontage.

Marylebone, East.—Entrance portico at Nos. 13-19, Bolsover-street, St. Marylebone (Mr. R. F. Atkinson for Messrs. John Lewis & Co.).

Width of Way and Space at Rear, and Projections.

Hampstead.—Re-erection of Lower Lodge, Branch-hill, Hampstead (Mr. W. Priddle, jun., for Mr. W. Smith).

Line of Frontage and Alteration of Buildings.

Paddington, North.—Erection of bay-windows and an addition at No. 46, Sutherland-avenue, Paddington (Mr. J. Lawrance).

Space at Rear.

Kensington, South.—Addition at the rear of No. 203, Brompton-road, Kensington (Mr. W. M. Proudfoot for Mr. E. Lloyd).

St. Pancras, West.—Building on the site of No. 36, Osnaburgh-street, St. Pancras (Mr. P. Waterhouse).

Space at Rear and Projections.

Lewisham.—Erection of seven houses on the north-eastern side of Cliff View-road, Lewisham, with bay-windows, porches, sham half-timber work (Mr. A. Marsh).

Alteration of Buildings.

St. George, Hanover-square.—Alterations at No. 6, Princes-street, Hanover-square (Messrs. Bywater & Sons, Ltd., for Mr. H. Corlett).

A NEW SASHLINE HOLDER.

AMONG the many devices for simplifying and improving the mechanism of the sash window the "Star" patent sashline holders and sliding pocket pieces (Messrs. H. M. Clements & Co., "Cecilhurst," Walderslade, Chatham) will, we think, hold a deservedly high place. The patent is composed of two parts, firstly, the holder, which replaces the ordinary fixing arrangement for the cord on the sash by a groove and knob socket, which is concealed by a small plate screwed down on the face of the sash. This enables a new cord to be fixed while the sash is in position, without disturbance to paintwork. The second part of the invention is a flap in the side of the frame, which is rebated and can be removed, the parting bead being drawn out. The new attachment can then be made to the sash weight and the work completed by a single workman in an hour or less.

The patent can also be used in connection with existing windows, a slightly modified form of construction having been arranged for this purpose.

The invention does away with the necessity for structural and other disturbance, and the inconvenience caused thereby, and will, we consider, be an additional inducement to all those who prefer the sash windows to any other form of openings, and we imagine that architects will do well to include this very simple device in their future specifications.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur:—

——	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Newcastle	10	10	10	10	10	10	9	6½	6½	6½
Sunderland	10	10	10	10	9½	9	9	6½	6½	6½
Darlington	9	9½	9	9½	9½	9	7½	6½	6½	7
Stockton-on-Tees	9	10	9½	10	10	9½	9	7	7	7½
Bradford	10	10	9	9½	9½	10	9½	7	7	7½
Halifax	9½	9	8½	8½	8½	9	8½	7	7	7
Hull	9½	9½	9½	9½	9½	9½	8½	6½	6½	6½
Leeds	10	10	9½	10	9	9½	8	7	7	7
Sheffield	10½	9½	9½	8½	9½	9½	8½	6½	6½	6½
York	9	9½	8½	8½	9½	8½	7½	6½	6½	6½
London	11½	11½	11½	11½	—	1s.	9	8	8	8
Brighton	8-9	8	8	—	—	—	—	—	—	—
Portsmouth	9½	9½	9½	9½	—	9½	7½	7	7	7
Southampton	8½	9½	9½	8	—	9½	8½	6½	6½	6½
Maidstone	9	9	9	9	9	9	8	6	6	6
Bristol	9½	9½	9½	9½	—	9½	9	6½	6½	6½
Plymouth	9	9	9	9	—	9	7½	6	6	6
Bath	8	8	8½	8	7½	7½	7	5–5½	5–5½	5–5½
Cheltenham	8½	8½	8½	8½	—	8½	8	5½	5½	5½
Exter	8	8	7½	7½	7½	7½	6½	5	5	5
Gloucester	8	8½	8½	8	8	8½	8	6	6	6
Hereford	8	8	7½	8	8	7	6½	5	5	5
Stroud	7½	7½	7½	7½	7½	7½	7	5½	5½	5½
Blackburn	10	10	10	9	9½	9½	9½	6½	7	7
Bolton	10	10½	10	10½	9½	10	9	—	—	—
Liverpool	11	11	11	11	10½	10½	9½	6½	6½	6½
Manchester	10	10½	10½	11	9	10	9½	6½	6½	7½
Oldham	10½	10½	10	9½	9	10	9½	6	7	7½
Preston	9½	10½	10	9	8½	9	8½	5½	6	6
Birmingham	10	10	10	10½	9	10½	9	7	7	7
Derby	9½	9½	9	9	9	9	8	6	6	6½
Leicester	9½	9½	9½	10½	9	9½	9	7	7	7½
Nottingham	10	9½	10	10½	9	9½	9	7	7	7½
Norwich	8	8	8	8	8	8	6½	5	5	5
Cambridge	9	8½	9½	9	8	9	7	5½	5½	5½
Oxford	9	8	8½	8½	8	8½	7	6	6	6
Southend	9	9	9	9	{ Piecework }	9	7	6	6	6
St. Albans	9	9	9	10	9½	9	8	6	7	7
Grays	—	10	10	—	—	9½	8½	7	7	7
Cardiff	9½	9½	9½	9½	9½	9½	8½	6½	6½	6
Swansea	9	9	9	9	8½	9	8½	6	6	6
Newport	9	9	9	9	8½	8½	8½	6	6	6
Chatham	8	9	9	9	9	8½	7	6	6	6
Birkenhead	11	11	11	10½	10	10	9½	6½	6½	6½

The mason's rate given is for bankers; fixers usually ½d. per hour extra.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERDEEN.—The District Lunacy Board have passed a scheme for the extension of Kingseat Asylum at a cost of over £12,000. Mr. A. H. L. Mackinnon is the architect.

Ashby-de-la-Zouch.—House in Avenue-road for Mr. Bailey.

Ashton-under-Lyne.—Plans passed by T.C.:—Addition to Hall-street Mission Schools; additions and alterations to St. Peter's Schools, Welbeck-street; internal alterations at the Textile Schools; Mr. John Braithwaite, six dwelling-houses in Arundel-street.

Athlone.—At an estimated cost of £11,900 the U.D.C. intend building working-men's houses. They have also decided to apply to the Board of Works for loans to open a public park and to improve the waterworks plant at a cost of £5,000.

Barnes.—Plans passed by U.D.C.:—Seven houses, Christ Church-road, Mr. G. A. Gale; eighteen houses, "The Priory," Church-road, Barnes, Messrs. Edwin Evans & Sons; one house, Clifford-avenue, Messrs. Kirk & Kirk; two houses, East Sheen-avenue, Mr. A. M. Aleen; two houses, East Sheen-avenue, Mr. G. W. Smith.

Barnet.—Plans passed:—Two houses, Macdonald-road, for Mr. W. Everett; open-air school,

* See also our list of Competitions, Contracts, etc., on page 628.

Chandos-avenue, in connection with Dame Owen School; road, west side of Friern-lane, for the British Land Company; and detached house, west side of Friern-lane, for Mr. E. K. Wilton.

Barnoldswick.—Plans passed:—Nine houses in Arthur-street for Mr. Henry Ibbotson; proposed garage in King-street for Mr. J. Garratt; outbuildings for Messrs. Edward & Henry Smith at Rainhall-road; conversion of house into house and shop for Mr. R. Peel, in York-street; ten houses in Frederick-street for Mr. George McDonald.

Basingstoke.—The T.C. have adopted plans for twenty-eight houses in Cranbourne-lane, and application will be made to the L.G.B. for sanction to a loan of £7,200 to carry out the scheme. Plans of the following buildings have been passed:—Extension of lavatory accommodation at factory in Station-hill for Messrs. Gerrish, Amos, & Simpkins; house in Penrith-road for Mr. H. G. Jefferd; shed at back of premises in Wote-street for Messrs. J. M. Carter & Son; bungalow, Kempshott Village Estate, for Messrs. Homesteads, Ltd.; garage at back of Barge Inn for Messrs. J. May & Co., Ltd.

Batley.—Plans approved by T.C.:—Conversion of cottages into workshop at Crofts, Healey, for Messrs. E. Walker & Co.; cart-shed, off Hollinmoat-lane, Healey, for Mr. James Tyler; and alterations to dwelling-house (formerly Prince of Wales Inn) in Cobden-street for Mr. Fred Pickles.

Bedford.—Plans passed by T.C.:—Stores, Brereton-road, for Messrs. G. Church & Son; additions to 23 and 25, Goldington-road, for Miss Whitlock; covered yard, 169, Tavistock-street, for Mr. W. Grant; alterations to 15, Russell-avenue, for Mr. R. Jenkings; additions, 21, Commercial-road, for Mr. J. O. King; extension to foundry, Queen's Engineering Works, for Messrs. W. H. Allen, Son, & Co., Ltd.; alterations to 4 Cauldwell-street, for the London County and Westminster Bank, Ltd.; barn and water closets, 43, 45, and 47 Union-street, for Mr. W. Grant.

Bexhill.—Detached house, Cooden-drive, submitted by Mr. H. Palmer, for Miss M. Roberts; business premises, St. Leonards-road, submitted by Mr. J. H. Lye, for Mr. F. King; detached house, Sutherland-avenue, submitted by Mr. John E. Maynard, for Mr. J. L. Hale; bungalow, Church Hill-avenue, Mr. John E. Maynard for Mr. W. C. Greed.

Blackburn.—Plans passed by R.D.C.:—Villa residence at Pleasington for Mr. T. Butler; cottage at Rockfield for Mr. A. Davies.

Bletchley.—Plans passed by U.D.C.:—Re-erection of the Navigation Inn and cottage adjoining; garage in High-street for Rowland Bros.; four semi-detached houses in the Leon-avenue Estate for Mr T. Best; four houses in Napier-street for Mr. T. Best, jun.

Bolton.—Plans passed by T.C.:—Messrs. J. Jackson & Sons, addition to Spa-road offices; Messrs. Johnson, Hodgkinson, & Pearson, Ltd., additional story to Victoria Mills in Cross-street; and Mr. H. Seddon, houses in Bentley-street.

Bromley.—Plans approved by T.C.:—Mr. H. R. G. S. Smallman's plan of new bank and shop, Market-square.

Carlisle.—The General Purposes Committee of the T.C. have agreed to purchase land from the Duke of Devonshire, situated near St. Aidan's vicarage, for a technical school, and also 5¼ acres of land in Blackwell-road for £1,850, as a site for an open-air school.

Chatham.—Plans passed:—House, Maidstone-road, for Mr. J. W. Halloran; bungalow, King Edward-road, Walderslade, for Mr. R. Hopkins; and rebuilding Nos. 1 and 3, Fort Pitt-street, for Mr. S. E. Bessent.

Chester-le-Street.—Plans approved by R.D.C.:—Two cottages at Fatfield Farm for the Earl of Durham; forty-six houses near North Biddick Hall for Mr. J. J. Paget; twenty-three houses and building plan of two houses at White House Farm, Witton Gilbert, for Mr. Thomas Lawson; one house and shop and eight houses in flats at Pine-street, Birtley, for Mr. B. Bolam; house in flats at Usworth-road, Springwell, for Mr. Thomas Mitchell.

Chippenham.—Sanction has been given to the T.C. to borrow £1,000 for street improvement; £2,320 for building twelve houses in Wood-lane in place of the workmen's dwellings, to be demolished; and £140 for the purchase of the land.

Chorley.—Banking premises, with dwelling-house, near St. John's Church, Whittle-le-Woods, for the Manchester and Liverpool District Banking Company, Ltd.

Coventry.—Extensive alterations are to be made at the railway-station.

Darlington.—Plans passed by T.C.:—Mr. J. E. Chilton, eleven houses in Alexandra-terrace, two houses in Dene-grove, six houses in Coniston-street, house in Bracken-road, two houses Pierremont-road, two houses Willow-road, house and shop, Coniston-street, house in Orchard-road, two houses and shop Olympic-street, and alterations to house in Thompson-street; Messrs. Kitching & Lee, two houses Neasham-road; Messrs. Blackett & Son, house in Woodlands-road, two houses Tower-road, and four houses West-crescent; Messrs. Blackett & Saltmer, two houses Salter's-lane; Messrs. Hughff Bros., house in Crosby-street; Messrs. Airey & Bainbridge, four houses Linden-avenue; Messrs MacLachlan & Co., new shop, Houghton Bridge Wagon Works; Mr. H. D. Pritchett, alterations and additions to Half-Moon Inn, Northgate; Mr. W. T. Aggutter alterations to the Robin Hood Inn, Church-street; Messrs. Clark & Moscrop, two houses, Skinnergate; Messrs. Hoskins & Brown, five houses, Bright-street; Mr. J. Walker, six houses, Thirlmere-road; and Mr. R. Turnbull, two houses, Garden Suburb.

Dover.—Two villas on the Lower-road by Mr. F. W Lewis; rebuilding of Terminus Hotel, Beach-street, by Messrs. Jennings & Duthoit; additions to mineral-water factory, Elizabeth-street, by Messrs. Beeston & Dixon.

Dublin.—The Corporation have decided to expend £45,800 on new workmen's dwellings on what is known as the Ormonde Market site, and to clear and rebuild areas at Crabbe-lane and Upper Mercer-street at an expenditure of £39,300.

East Dereham.—Two houses in Back-lane for Mr. E. R. Larner; two houses in Yaxham-road for Messrs. W. & J. Larner.

Edinburgh.—Warrants granted by Dean of Guild Court:—North British Distillery Company, Ltd., to reconstruct dreg drying-house, etc., at Gorgie-road, and Mr. John Gavins, to erect four double villas at Greenbank-crescent.

Foleshill.—The L.G.B. have held an inquiry into the application of the R.D.C. for sanction to borrow £1,067 for street improvements.

Glasgow.—Warrants granted by Dean of Guild Court:—Mr. Walther M. Bergius, engineer, 10, Lilybank-gardens, Hillhead, addition to his engineering works, Canal-street and Dobbie's Loan; Messrs. Howard & Wyndham, Ltd., theatre proprietors, 5, St. Andrew's-square, Edinburgh, alterations to Royal Theatre Hall at 75, Cowcaddens-street; Messrs. Andrew Meikle & Co., builders, 4, Bath-street, villa and offices on the north side of Southbrae-drive, Jordanhill; Mr. John M'Cammond, builder, 19, Albany-terrace, Shettleston, buildings in Sandyhills-road, Shettleston; Messrs. Mechan & Sons, Ltd., engineers, Scotstoun Ironworks, Scotstoun, workshops in South-street and Balmoral-street, Scotstoun; Messrs. William Beardmore & Co., Ltd., Parkhead, Glasgow, buildings in Old Edinburgh-road, Parkhead; Messrs. Bulloch, Lade, & Co., Ltd., distillers, 4, Bothwell-street, buildings at the Loch Katrine Distillery, Yate-street; the North British Locomotive Company, Ltd., 110, Flemington-street, Springburn, extensions to their works in Blenheim-street; the Corporation, to erect tenements of dwelling-houses in Gallowgate and Moore-street; also to make an extension of the Meat Market in Armour-street, and to make alterations on the Western Police-buildings; Anglo-American Oil Company, Ltd., 118, Queen-street, buildings for stables, oil tanks, and motor spirit tanks at Canal-street, Port-Dundas.

Houghton.—Plans passed by R.D.C.:—Twelve houses at Sedgeletch for Mr. J. Fisher; alteration to house and shop at Front-street, Bankhead, for Mr. Chapman; and two houses at Rainton Gate for Mr. S. Patrickson.

Hove.—It is proposed to lay wood paving in New Church-road, between Carlisle-road and the borough boundary, at an estimated cost of £3,500.

Inverness.—The School Board have passed plans for the carrying out of extensive sanitary improvements on the Merkinch School, the provision of accommodation for the teaching of

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vagrant children, the erection of a hall, and additions to the janitor's lodge.

Kenilworth.—Plans passed:—Alterations, Earl of Clarendon Inn; new shop-front, New-street, Mr. Wringrose.

Lanarkshire.—The C.C. has adopted the scheme put forward by the Middle Ward District Committee for the erection of fifty houses of different types under the Housing of the Working Classes Acts, at an estimated cost of £10,729, at Cleland, and 100 houses of different types at Harthill, at an estimated cost of £20,854.

Luddenden.—The Surveyor to the R.D.C. has been instructed to erect a mortuary. Plans for a new institute in Station-road have been approved.

Luton.—The T.C. have passed plans for seventeen houses and extensions to works in Dallow-road for the Davis Gas Stove Company.

Manchester.—The Baths Committee have applied to the L.G.B. for permission to borrow the sum of £13,100 for the provision of baths and washhouses in Barlow-road, Levenshulme, and for £3,770 for public washhouses adjoining the Leaf-street Baths.

Northwich.—The River Weaver Trustees have given £400 and a plot of land in Navigation-road towards the erection of a parish hall in connection with Holy Trinity Church.

Richmond.—Plans passed by T.C.:—Mr. E. J. Partridge, alterations to 23, Cardigan-road; Mr. S. D. Gough, house, Ennerdale-road; Mr. J. D. Hunt, alterations to 24, Cardigan-road; Messrs. Robinson & Roods, two new streets off High Park-road and North-road.

Rochester.—Plans passed by T.C.:—House, Pattens-lane, St. Margaret, for Mr. D. G. Macdonald; four houses, Cookham-hill, Borstal, St. Margaret, for Mr. J. Langridge; electric station, Borstal-road, St. Margaret, for the Kent Electric Power Company, additions to Mathematical School, High-street, St. Nicholas, for the Governors.

Romford.—Plans passed by R.D.C.:—Office and weighbridge, Roneo Works, Hornchurch; three houses in Ernest-road, Hornchurch, for Homesteads, Ltd.; two houses in Fitzilian-avenue, Harold Wood, for Mr. G. Wingfield; house in Whalebone-lane, Bacontree Heath, for Mr. J. French; and a reinforced-concrete bridge over the Rom at Hooks Hall Farm, Dagenham, for the Ilford Park Cemetery Company.

Rotherham.—Plans have been passed by the R.D.C. of 109 houses at Woodend, Maltby, for the Maltby Colliery Company, and for nineteen houses at Thurcroft for the Rothervale Colliery.

Rothwell.—Plans approved:—Four houses in Middleton-avenue for Mr. P. Mitchell, and two houses in Churchfield for Mr. W. E. Richardson.

Royton.—Two houses in Park-street for Mr. H. Beswick.

Ruislip-Northwood.—Plans passed:—Church, Hallowell-road, for Deacons of St. John's Presbyterian Church, submitted by Messrs. F. Rowntree & Sons; bungalows, Home Freehold Estate, Northolt Junction, for Mr. Davies, submitted by Mr. H. Vulliamy; Club House, Northolt-road, Eastcote, for Messrs. Debenhams, Ltd., submitted by Mr. G. L. Sutcliffe; house, Dene-road, for Mr. H. Watson, submitted by Mr. B. Crewe; house, Northolt-road, Eastcote, for Messrs. Debenhams, Ltd., submitted by Mr. G. Sutcliffe.

Seaham Harbour.—Plans passed by the U.D.C.:—Mr. J. W. Claxton, for Mr. Thos. Curry, eight cottages in Garron-street; Mr. S. Hudspeth, house and shop, 68, Princess-road; Mr. Hugh Kirton, six houses in Edward-street; Mr. Hugh Kirton, house in Union-street.

Stafford.—Plans passed by T.C.:—Mr. W. Skelhorne, seven houses, Oxford-gardens; Mr. W. H. Johnson, ten houses, North-street; Mr. H. J. Clay, four houses, Weston-road; Mr. G. Smith, two houses, Cambridge-street.

Stalybridge.—Plans passed by T.C.:—Alteration of Blue Bell Inn, Melbourne-street, by Mr D. C. McCulloch; sanitary improvements in connection with property in Vaudrey-street, belonging to Mr. Thomas Hague; sanitary improvements in connection with property in Grosvenor-street and Wilkinson's-place, belonging to Miss A. C. Wilkinson; sanitary improvements in connection with premises Nos. 27, 29, and 31, Grosvenor-street, belonging to Mrs. Hall; sanitary improvements in connection with premises at "The Fold," Heyrod, belonging to the Stalybridge Industrial Co-operative Society, Ltd, and others; new windows and harness-room at Rassbottom House, belonging to Mrs. Hurst; and five new houses in Mostyn-street by Mr. C. R. Phillips.

Stocksbridge.—Plans passed by U.D.C.:—Stables and coach-house, Edward-street, for Mr Alfred Marshall; ten houses for Mr. R. Smith on Holehouse Estate; two houses for Mr. E. Laycock on Holehouse Estate; two houses for Messrs. J. & J. W. Marshall, Rundle-road; alterations and additions to the house in Whitwell-crescent for Mrs. L. Bateman; addition to Rocher-villas for Mr. S. Andrews; stable and bakehouse for Mr. W. Padgett at New-road.

Sudbury (Suffolk).—Plans for two houses in Belle Vue-terrace for Mr. C. E. Dennington, for two houses in Acton-road for Mr. G. C. Gooday, and for two houses in Acton-road for Mr. A. E. Rudd, have been passed.

Sunderland.—Plans passed:—Messrs Jos. Potts & Sons, for the Rev. A. A. Boddy, a new Sunday-school, in corrugated-iron, in connection with St. Aidan's Church at Roker; Messrs W. & T. R. Milburn, alterations to Bridge End Vaults and the rebuilding of the Volunteer Arms, Castle-street; Mr. George T. Brown, for Messrs. Barclay & Co., Ltd., alterations and additions to the bank premises in Fawcett-street and St. Thomas-street.

Swanage.—Two houses in Victoria-avenue, W. for Mr. Date, deposited by Mr. L. D. P. Way.

Swindon.—Plans passed by T.C.:—Mr. E. C. Skurray, addition to flour mill, Lowestoft-street; Mr. R. J. Beswick, for East-street Co-operative Society, alterations, 6, Fleet-street; Mr. F. P. Goddard, kitchen and bedroom over kitchen at house at Rushey Platt; Messrs. Bishop & Fisher, for Messrs. Mills & Merricks, shop-front, Regent-street; Mr. R. J. Beswick, enlargement of printing works, 51, Bridge-street; Mr. R. J. Beswick, for Mr. S. B. Cole, alterations, 92, Regent-street; Mr. J. S. Guggenheim, studio, 6, Cambria-place; Mr. T. W. Bradley, builder's shed, 225, Ferndale-road.

Truro.—The T.C. have decided to proceed with a sewage-disposal scheme estimated to cost £24,300.

Ulverston.—Plans passed by R.D.C.:—New Dutch barn and cowhouse at Coniston for Mr. C. Cann; alterations to cottage at Allithwaite for Mr. C. Chippendale; alterations and additions at Hawkshead for Mr. R. R. Rothwell; new house at Allithwaite for Mr. W. Drinkall; alterations to cottage at Lindale for Messrs. Thompson Bros.; alterations to Satterthwaite Church for Messrs. Walker, Carter, & Walker, architects, Windermere; new house at Broughton for Mr. R. Newbolt.

Watford.—Plans passed by U.D.C.:—Surgery, Gilling Lodge, Church-road, for Dr. Kirkwood; alterations and additions, London and County Bank, High-street and Queen's-road, for the London and County Bank, Ltd.; house, Rickmansworth-road, for Mr. D. Eames; house, the Shepherd's-road, for Messrs. W. King & Sons; house, Hyde-road, for Mr. W. Barrett; additions in rear of 49, Kingsfield-road, for Mr. Puddifoot; thirty-six houses, Belgrave-avenue, for Messrs. W. & D. Wilkins; redrainage, the Almshouses, Rickmansworth-road, for Lord Essex; house, Buckingham-road, for Mr. J. Bonham.

Wellingborough.—The negotiations for the purchase of the Victoria Grounds by the Ideal Clothiers, Ltd., at Wellingborough, have been completed, and the company propose to erect thereon another large factory, Messrs. Sharman & Archer are the architects.

Willington.—Two houses at Low Willington by Mr. J. Wilkinson, and alterations at Burn Hotel, Willington, by the North-Eastern Breweries, Ltd.

Windsor.—Plans passed for alterations at the Castle Hill for the Windsor Restaurants, Ltd.

Woking.—House and shop at junction of High-street and Chapel-street for Mr. R. Harris. The U.D.C. have approved Mr. Midgley Taylor's No. 2 scheme—partial bacterial and subsequent land treatment—for improving the means of purification at the sewage farm, and decided to apply to the L.G.B. for permission to borrow £18,600 for this purpose.

Wolverhampton.—The T.C. have decided to erect ten houses for firemen at an estimated cost of £300 each.

Yarmouth.—Plans passed by T.C.:—Office, Queen's-road, for Mr. S. D. Harrison; lorry-shed, Bath-hill, for Messrs. Burwood; alterations, King-street, for Mr. A. E. Kerridge; pavilion and shelters, Britannia Pier, for Britannia Pier Company; additions, Middle-road, South Denes, for Mr. James Lawson; flat roof, Battery-road, for the Great Yarmouth Steam Drifters Company; house, Windsor-avenue, Garden Suburb, for Messrs. J. & R. Chaston; shop-front, Bell's-road, Gorleston, for Mrs. M. Eagle; additions to workshop, Riverside, Gorleston, for the Royal National Mission to Deep Sea Fishermen.

WAGES IN THE BUILDING TRADE.

Batley.—An advance in wages of ½d. per hour (9d. to 9½d.) will be paid to the plasterers on and after June 1.

Blackburn.—His Honour Judge E. A. Parry, the arbitrator appointed by the Board of Trade to determine matters affecting carpenters and joiners in this district, has issued his award. After hearing the parties the arbitrator raised the rate of wages ½d. per hour (9½d. to 10d.), and made various alterations in the working rules.

Cleckheaton.—On and after June 1 an advance in wages of ½d. per hour (9d. to 9½d.) will be paid to the plasterers in this district.

Clydesdale District.—The Conciliation Board for the carpenter and joiner trade in this district, being unable to agree upon a proposed alteration in the rate of wages for carpenters and joiners, applied to the Board of Trade to appoint an arbitrator. Professor J. M. Irvine, K.C., was appointed in that capacity, and issued his award on May 13, in which he granted the men an advance of ½d. per hour (9½d. to 10d.).

Colwyn Bay.—Advances in wages of ½d. per hour in summer and ½d. per hour in winter have been granted to the carpenters and joiners as from June 1. The present rate for the summer months is 7½d. per hour, and for the winter months 7⅜d. per hour.

Coventry.—At a meeting of the National Joint Committee of Appeal, held in London on May 12, the appeal of the operative plasterers of this district was heard. The men demanded an advance in wages of 1½d. per hour (9½d. to 11d.), a reductions of the working hours, and alterations of the walking time, overtime, and lathing rules. The employers put in a counter notice dealing with the rules already cited, and adding a new rule as to employment of non-union men. They wanted no standard rate, but a sliding scale, and thought no advance should be given at present. The Board heard the witnesses representing both sides, and unanimously decided as follows:—"That the wages of operative plasterers in Coventry be advanced ½d. per hour as from January 1, 1915, but if in the settlement with the other trades a greater advance is granted, the operative plasterers are to participate equally in such greater advance. That the Board gives no decision, but recommends that the hours of labour be reduced as asked for by the men, but only when a general reduction takes place in the other trades. That the walking ti... boundary remain at two miles from the cent... That the lodging allowance for country jobs ... 5s. per week. That the rule as to lathing rema... as at present. That overtime shall be work... only at the request of the employer, when ti... and a quarter shall be paid for the first t... hours and time and a half afterwards un... starting time next morning; on Saturdays ... 4 p.m. to be paid time and a half, after 4 p... and on Sundays and Christmas Days doub... time; on Bank Holidays (except Good Frid... time and a quarter for the working day, aft... wards time and a half. The rest of the rules ... remain as at present. The Board deprecates t... letting of plaster-work labour only, ... trusts that both sides will endeavour to ... accordingly."

Dewsbury.—An advance in wages of ½d. p... hour (9d. to 9½d.) will be paid to the plaster... in this district as from June 1.

Edinburgh.—Professor Richard Lodge, ... arbitrator appointed by the Board of Trade ... determine differences between the Operati... Bricklayers' Society and the Edinburgh, Lea... and District Building Trades' Association w... regard to wages, issued his award on May ... deciding that the rate should continue to be 1... per hour.

Glasgow.—The Conciliation Board for t... joiner trade for this district, being unable ... agree upon certain matters, made application ... the Board of Trade for the appointment of ... Court of Arbitration consisting of three perso... A court has been appointed, consisting of Sher... Principal A. O. M. Mackenzie, K.C., and Mess... Geo. Pate and W. Adamson, M.P. The matte... referred to the decision of the court concer... wages, hours of labour, overtime, travelling ti... and expenses, country money, time employed ... qualify for payment of grinding time, and app... cation of rules and working regulations to wa... houses and public works where joiners ... employed. Professor J. M. Irvine, K.C., ... arbitrator appointed to determine a demand ... the operative slaters for an advance in wages ... 1d. per hour (9½d. to 10½d.), issued his award ... May 1, in which he granted the men an advan... of ½d. per hour.

Grimsby.—Mr. R. E. Moore, the arbitra... appointed by the Board of Trade to determi... matters in dispute with regard to wages betw... master and operative painters, has issued ... award. Having heard the parties, the arbitra... raised the rate of wages to 8½d. per hour.

Hereford.—The appeal of the operative pl... terers of this district for an advance in wages ... 1d. per hour (8d. to 9d.) was heard at a me... ing of the National Joint Committee of Appe... held in London on May 12. After hearing t... evidence from both sides, the Board unanimou... decided:—"That an advance of ½d. per hour ... granted to the operative plasterers of Herefo... as from July 1, 1914. The Board deprecates t... letting of plaster-work as labour only, and tru... that both sides will endeavour to act accor... ingly." The men had desired to raise a questi... of demarcation, but were told it must first ... dealt with locally, in accordance with the rul...

Horwich.—As the result of a three week... strike, the painters in this district have be... granted an advance in wages of ½d. per ho... (8½d. to 9d.) as from June 1.

Leeds.—At a meeting of the National Joi... Committee of Appeal, held in London on May ... the appeal of the operative plasterers of th... district was decided. The operatives did n... appear when the case was called; the employe... representatives were present, however, and t... Board decided that the case must proceed. T... employers' representatives were therefore invit... to make a statement, and said that the oper... tives had put in a demand for 1d. advance fr... 9½d. to 10½d. per hour. Owing to a difference ... the boundary rule, the joiners, bricklayers, a... plasterers' labourers are on the jobs before t... plasterers, and the employers desired the pl... terers' boundary adjusted to coincide with t... rest. The employers had offered an advance ... ½d. per hour, but this the men refused to acce... The decision of the Board was unanimously ... "That the wages of operative plasterers in Lee... be advanced ½d. per hour as from May 1, 19... The boundary rule to be made to agree with t... one now in force with the plasterers' laboure... The overtime rule to be altered to time and ... quarter for the first two hours. The decisi... to endure for two years."

London.—As requested in the resolution of t... National Federation of Building Trades Em... ployers of Great Britain and Ireland, the Lond... Master Builders' Association has met the repr... sentatives of the trade unions involved in t... present dispute. A conference was held ... Friday last, but adjourned after a sitting ... over seven hours. The meeting was resumed ... Monday last. After a sitting of nearly nin... hours, certain proposals for settlement we... made, which the men's representatives took ba... to their executives. It is announced that ... ballot of the rank and file will be taken on t... proposals, and the result is expected on Wedne... day next. We have received a copy of the wo... ing rules agreement between the London Assoc... tion of Master Decorators and the Nation... Amalgamated Society of Operative House a... Ship Painters and Decorators. The rules pr... vide that the working hours in summer shall ... fifty per week for thirty-five weeks, and duri... seventeen weeks of winter, commencing on t... last Monday in October, the working hours to ... forty-four per week; the rate of wages to be 9... and 10d. per hour; overtime to be paid at t... rate of time and a quarter from leaving-off ti... until 8 p.m., from 8 p.m. to 10 p.m. time and ... half, after 10 p.m. double time, Saturday aft... noon from noon to 4 p.m. time and a half, dou... 4 p.m., also Sundays and Christmas Days, dou... time; night gangs to be paid 2d. per hour ext... the term "London District" to mean a twel... mile radius from Charing Cross; all disputes

referred to a Board of Conciliation, consisting of three members nominated by the employers and three by the workmen, which shall be summoned within four days, and, if practicable, shall give its decision within the next three working days. In the event of the Board of Conciliation failing to agree, it shall make application to the Board of Trade under the Conciliation Act, 1896, for the appointment of a person to act as conciliator, the decision of such person or the Conciliation Board to be final and binding on both parties; the rules are to be altered or terminated by six months' notice on either side, and the decorating trade is not to be affected by any action of ship painters. Rule 1 of the above rules as follows:—"Throughout these rules 'employer' means a member of the London Master Decorators' Association, and 'workman' means a member of the National Amalgamated Society of Operative House and Ship Painters, and no exception shall be taken to the employment or non-employment of a man on the ground that he is or is not a member of the said society; neither shall any exception be taken to the employment of a man in any other trade on the ground that he is, or is not, a member of a trade society." The similar rule in force between the London Master Builders' Association and the trades unions prior to the existing dispute in the building trade reads thus:—"Throughout these rules 'employer' means a member of the London Master Builders' Association, and 'workman' means a member of the trade society or societies on whose behalf these rules have been signed, and no exception shall be taken to the employment or non-employment of a man on the ground that he is, or is not, a member of such society or societies." It will be seen that the former is more stringent than the latter, and yet there has been no disturbance in the decorating trade. Apparently the trade unions engaged in the present struggle (among them is the National Amalgamated Society of Operative House and Ship Painters and Decorators) see no inconsistency in contesting with the London Master Builders' Association terms which they have signed with the London Association of Master Decorators. This may be justifiable as a matter of strategy, but seems injurious to any principle that may be involved. The London Master Builders' Association may well complain of such an attitude on the part of the unions, the members of which they are accustomed to employ so extensively.

Malvern.—The appeal of the operative plasterers of this district was heard at a meeting of the National Joint Committee of Appeal, held in London on May 13. The men demanded an advance in wages of 1d. per hour (8d. to 9d.). The employers had offered ½d. advance immediately, and a further ½d. on October 1, but the men refused to accept this. The Board unanimously decided:—"That the operative plasterers of Malvern be granted an advance of ½d. per hour from July 1, 1914. That as regards the rest of the rules, until proper notice is given to alter them, they must remain in force."

Mirfield.—An advance in wages of ½d. per hour (8d. to 9½d.) has been granted to the plasterers in this district as from June 1.

Oswestry.—On and after June 1 an advance in wages of ½d. per hour (9d. to 9½d.) will be paid to the plasterers in this district.

Wigan.—The builders' labourers and painters in this district have been granted advances in wages by a decision of Sir Alfred Hopkinson, K.C., the arbitrator appointed by the Board of Trade. In the case of the labourers the arbitrator decided that there shall be a uniform rate of 7d. per hour all the year round. The painters have been granted an advance of ½d. per hour (9d. to 9½d.).

York.—At a meeting of the National Joint Committee of Appeal, held in London on May 13, an appeal was heard from the operative plasterers of this district. The men asked for an advance in wages of 1d. per hour (9½d. to 10½d.); they also wanted the walking boundary decision of this Board, given last year, revoked. The employers said an attempt had been made by the other parties to change the boundary, but they had all withdrawn it except the plasterers. The Board decided unanimously:—"That the wages and rules remain as at present."

GENERAL BUILDING NEWS.

CHURCH, ACTON, W.

A new church, St. Peter's, Acton, W., is in course of erection from the design of Mr. William A. Pite, F.R.I.B.A., Jermyn-street, St. James's, S.W. The church will possess some interesting elements of construction, notably the reinforced concrete columns and arches. Accommodation will be provided for about 750 worshippers, and the building will be ready for occupation early in 1915. The general contractors are Messrs. Joseph Dorey & Co., Ltd., Brentford, W., and the ferro-concrete work will be by the Hennebique System, Victoria-street, S.W.

GARAGE, VAUXHALL BRIDGE-ROAD, S.W.

A large garage, etc., will be erected shortly on an extensive site which has been cleared recently in Vauxhall Bridge-road, Chapter-street, and Douglas-street, Westminster, S.W. The work is being carried out for the Allen Motor Omnibus Company, Westminster, and the architects are Messrs. Hobden & Porri, Finsbury-square, E.C. The frontage to Vauxhall Bridge-road will be about 67 ft. and to Chapter-street about 152 ft. The main entrance for the omnibus vehicles will be in Douglas-street, and in Vauxhall Bridge-road there will be showrooms, etc. The ground floor, which will be well lighted by a system of prismatic roof lights, etc., will be equipped specially for garage purposes, with inspection pits, petrol stores, etc., while the first, second, and third floors will be arranged for administrative and other purposes. The lifts will be a feature. The general contractors are Messrs. Bovis, Ltd., Upper Berkeley-street, Portman-square, W.

IMPROVEMENT SCHEME, HASTINGS.

An important improvement scheme is being carried out gradually at Hastings. The existing hospital on the sea front will be closed and a Kursaal erected on the site. New buildings for the hospital will be built further inland and the open space between will be utilised for public tennis courts, bowling greens, etc. Provision for an art gallery and museum is made in the vicinity, and by the pier better accommodation will be provided for the band. Some of the work is in progress at the present time, and the scheme will be worked out as expeditiously as possible.

OFFICE BUILDINGS, ETC., KINGSWAY.

A block of offices, etc., to be known as Imperial-buildings, is in course of erection at the corner of Kingsway and Great Queen-street, W.C. The architects are Messrs. Metcalf & Greig, Kingsway-chambers, Kingsway, W.C., and the general contractors are Messrs. T. H. Kingerlee & Sons, Shepherd's Bush and Oxford.

45, GREEN-STREET, W.

An important town house is in course of erection at 45, Green-street, Grosvenor-square, W., the work being at present up to the first-floor level. The building will consist of basement and four stories, the front being of Portland stone. The architect is Mr. F. W. Foster, Seymour-street, Portman-square, W., and the general contractors are Messrs. Foxley & Co., Leinster-terrace, Bayswater, W. The steelwork is by the Fram Steel and Fireproof Construction Company, Ltd., Victoria-street, Westminster.

TRADE NEWS.

Under the direction of Mr. W. H. Watkins, F.R.I.B.A., architect, Bristol, the "Boyle" system of ventilation (natural), embracing Boyle's latest patent "air-pump" ventilators and air-inlets, has been applied to the Cheltenham-road Cinema, Bristol.

The Isolation Hospital, Billericay, is being supplied with Shorland's exhaust roof and special inlet ventilators by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

For rendering the backs of fountains in their schools, the London County Council have used the powder "Pudlo," which makes cement waterproof.

Among recent undertakings in which use is being made of "Ceresit" are the following:—The floors in large extensions at the Convent of the Sacred Heart at Aberdeen; general work on the Blair Atholl Estate, Perthshire; for floors and general improvement work on Lord Aberdeen's estate at Haddo House, Aberdeenshire; and at the municipal works at Banchory, Kincardineshire.

METROPOLITAN ASYLUMS BOARD.

AT the fortnightly sitting of the Board on Saturday the following matters were dealt with:—

New Works.—The Local Government Board signified their assent to the proposed alterations in the hot-water supply at the Eastern Hospital at a cost of £900; and to the provision of additional accommodation for the nurses at the South-Eastern Hospital, at a cost of £584.

Architectural Adviser.—It was decided to appoint Mr. E. T. Hall, F.R.I.B.A., as architectural adviser in connection with the provision of sanatoria.

East Cliff House.—On the recommendation of the Works Committee it was decided to forward the plans prepared by Mr. T. W. Aldwinckle for the reconstruction and enlargement of East Cliff House, Margate, to the Local Government Board for their approval.

TRADE CATALOGUE.

Messrs. S. W. Francis & Co., Ltd., of 64-70, Gray's Inn-road, W.C., have issued an up-to-date illustrated catalogue and list of prices, which contains descriptive drawings of the various revolving shutters and brass sash-fronts manufactured by them. This list affords valuable information to those specifying for public buildings, shop fronts, etc.

FOREIGN AND COLONIAL.

Steel-Frame Buildings, Egypt.

The London agent for the Egyptian War Office invites tenders for the supply of five steel-frame buildings. Full particulars may be obtained from the office of Sir A. L. Webb, K.C.M.G., Queen Anne's-chambers, Broadway, Westminster, S.W., by whom also tenders will be received up to June 9, to remain open for seven days.

Cement Industry, Greece and United States.

It is stated in the *Board of Trade Journal* of May 14 that the local cement industry in Greece has greatly developed during recent years. There are two cement factories, one in Eleusis, producing about 20,000 tons annually, and another in the Piræus, producing 5,000 tons annually. According to returns published by the United States Geological Survey, the total quantity of Portland cement manufactured in the United States in 1913 was 92,097,131 barrels (of 380 lb.), as compared with 82,438,096 barrels in 1912. The stocks of cement on hand are stated to amount to 11,220,328 barrels.

PATENTS.

APPLICATIONS PUBLISHED.*

9,690 of 1913.—C. F. Casella & Co., and Abraham: Theodolites and like instruments.

9,808 of 1913.—Solomon Harry Goldberg: Securing or fixing of roofing and similar materials.

11,498 of 1913.—John Samuel Rigby: Induration of concrete blocks or articles.

11,517 of 1913.—Albert Lyon and William Sanderson: Chimney and ventilating shaft tops or terminals.

17,645 of 1913.—Ralph Willie Oddy and Walter Jackson: Chimney-pots and the like.

18,085 of 1913.—Eugen Aron and Hermann Aron: Locking devices for frameless windows.

22,345 of 1913.—Leonel Huguet: Ladders, scaffolding, and the like.

23,170 of 1913.—George Edgar Hughes: Ventilation of the bowls or pans of water-closets.

6,284 of 1914. Frederick John Turner: Casements.

THE ASSOCIATION OF SUPERVISING ELECTRICIANS.

A GENERAL meeting was held at St. Bride Institute, E.C., on May 7 last. It was decided that the headquarters should be at St. Bride Institute. The membership of the Association is confined to foremen, supervising engineers, and managers in the electrical contracting trades, and the intention of the founders to admit only men of undoubted qualifications is safeguarded by the appointment of an Investigating Committee, acting directly under a Board of Control. Subscriptions of 10s. per annum, payable 2s. 6d. quarterly in advance, with an entrance fee of 5s. on nomination, was decided upon for London members; country members, who permanently reside and whose business address is outside a 20-mile radius of headquarters, are admitted at 5s. per annum, payable in advance.

It was resolved that a benevolent fund should be formed, and honorary members' subscriptions and all special donations should be placed to a reserve fund, available for the benefit of members requiring assistance. It was also decided to keep a register of vacant situations.

The general rules, together with nomination papers, may be obtained from the Hon. Secretary, 14, Pulborough-road, Southfields, S.W. The objects of the Association are as follows:—

a. To assist members in obtaining information of situations.

b. To form a technical library for the use of the members.

c. To form a benevolent fund for the assistance of members in distress.

d. To endeavour by means of lectures and visits to large works to maintain a high standard of efficiency of all members.

e. To foster the apprentice system of learners in the electrical trade.

f. To endeavour to extend the attendance of electrical workers to evening schools, both technical and practical.

g. To arrange reading of papers on electrical subjects by members or visitors invited from other societies.

h. To arrange periodical social gatherings to promote knowledge and good-fellowship amongst members.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

List of Competitions, Contracts, etc.

For some contracts still open, but not included in this List, see previous issues. **Those with an asterisk (*) are advertised in this number:** Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, xxix.; Auction Sales, xxxiii., xxxiv. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

Competitions.

MAY 23. — **Manchester.** — COTTAGES. — The Sanitary Committee of the Manchester Corporation invite architects and others to submit competitive plans, specifications, and estimates for semi-detached cottages on their Blackley Estate. Particulars of the Sanitary Department, Civic-buildings, Mount-street, Manchester. Premiums will be paid of £50 and £25 for the first and second best plans, etc., as selected. Deposit, £1 1s.

JUNE 2.—**Grimsby.**—CLUB.—The Committee of the New Constitutional Club invite designs for new premises to be erected at a cost of £3,000, exclusive of fees and furnishing. Premiums of £40 (which will merge with the architect's commission), £20, and £10 respectively. Particulars of Mr. H. W. V. Skeckell, secretary, Constitutional Club, Victoria-street, Grimsby. Deposit, £2.

JUNE 20.—**Orillia.**—MONUMENT.—The Executive Committee of the Champlain Tercentenary Committee invite competitive designs for a monument to Samuel de Champlain. Not to cost more than £4,100. See advertisement in issue of February 13.

JUNE 23.—**Sunderland.**—SCHOOL.—The Sunderland B.C. invite competitive designs for a proposed secondary school. Premiums £100, £50, and £25 respectively. See advertisement in issue of April 24.

JULY 16. — **Middleton.** — TOWN HALL. — The Middleton Corporation invite competitive designs for a new Town Hall. Premiums, £100, £50, £20 respectively. See advertisement in issue of April 24.

SEPTEMBER 7.—**London.**—SCHOOLS.—The L.C.C. invite architects to submit designs for two new schools. See advertisement in issue of May 1.

JANUARY 15, 1915.—COLLEGE MEMORIAL LECTURE HALL.—Designs for the Alexander Thompson Travelling Studentship must be delivered by the above date.

Contracts.

BUILDING AND PAINTING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

MAY 25.—**Banbury.**—PAINTING.—For painter's work required to be done to the Corporation stables, stores, etc. Specification of the Borough Surveyor, Town Hall, Banbury.

MAY 25.—**Cardiff.**—BRIDGE.—(1) The construction of a reinforced concrete bridge, 26 ft. span, and (2) a glazed annexe to the refreshment house at Roath Park, for the Corporation. Specifications at the City Engineer's Office, City Hall, Cardiff.

MAY 25.—**Chesterfield.**—ALTERATIONS.—Alterations and additions to stores for the Chesterfield Gas and Water Board. Mr. J. Middleton, Chesterfield.

MAY 25. — **Crumlin.** — SCHOOL.—Erection of school at Crumlin. Specification of Mr. Geo. Sands, architect, Lisburn.

MAY 25.—**Elsecar.**—STORES, ETC.—For erection of new coal stores, shed, boundary walls, etc., for the Elsecar, Wentworth, and Hoyland Gas Company. Specifications of the Manager at the Gas-works, Elsecar.

MAY 25.—**Glamorganshire.**—ADDITIONS, ETC.—The Glamorgan C.C. invite tenders for (1) additions to the Tonysguboriau School, near Llantrisant; (2) repairs to the Council school at Pontyclun; (3) removal of temporary building from Bedlinog and re-erection at Deri; (4) levelling playground and building retaining wall at the Council School at Deri; (5) painting the exterior of the temporary building at Tirphil Council School; (6) erection of new school at Fochriw; (7) painting the following schools in the Western Division during the midsummer holidays in August:—Pontardulais infants', Lower Loughor, Llanmorlais, Vernon-place (including temporary building), Herbert-road, Cwmllynfell; Penclyn, Gwaunclasgurwen, Abergwynfi boys' and girls, Llangyfelach, Peniel Green mixed, Oystermouth infants', Glais mixed and infants', Plasnewydd boys', Banwen mixed, Alltwen infants', Maesteg Secondary 'cookery and gymnasium block), Cadle mixed, Cwmgors, Resolven infants', Sandfields mixed, Three Crosses infants', Tyderwen mixed, Cwmfelin, Port Talbot Eastern infants', Port Talbot Higher Elementary, and Port Talbot Central boys' (including caretaker's house), Penclawdd mixed, Kingsbridge, Tyderwen infants', Aberdulais mixed, Blaengwrach mixed, Jersey Marine, Seven Sisters infants', Godre'rgraig mixed, Rhos, Glyncorrwg, Gendros mixed, and Gowerton girls' and infants'; temporary buildings at Abercregan, Cilfrew, and Jersey Marine; Seven Sisters teacher's house. Specifications for all works and quantities of Mr. T. Mansel Franklen, Clerk of the C.C., Glamorgan County Hall, Cardiff.

MAY 25.—**Gravesend.**—ADDITIONS.—Construction of switchboard platform extension and high-tension room at the Electricity Works, Gravesend, for the T.C. Specifications at the Borough Surveyor's Office.

MAY 25.—**Gwalchmai.**—ALTERATIONS, ETC.—For altering the C.M. chapel, erecting schoolroom, etc., at Gwalchmai, Anglesey. Mr. R. Lloyd Jones, architect, 14, Market-street, Carnarvon.

MAY 25. — **Hereford.** — HOUSES.—Erection of three detached small farmhouses for the C.C. Quantities of Mr. B. Dear, 132, Owen-street, Hereford. Deposit, 5s.

MAY 25.—**Horncastle.**—BRIDGE.—Building a second bridge over the stream on the road leading from Haltham to Wood Enderby, for the Horncastle R.D.C. Specifications at the Council Offices, 4, Church-lane, Horncastle.

MAY 25. — **Lowestoft.** — PAINTING.—Painting the car-sheds, offices, and tramway poles for the Corporation. Mr. Herbert H. Saunders, General Manager.

MAY 25.—**Manchester.**—PAINTING.—For painting various bridges in the city. Specification at the City Surveyor's Office, Town Hall, Manchester. Deposit, £2 2s.

MAY 25. — **Meltham.** — HOUSE. — Erection of detached house, Meltham. Messrs. James H Hall & Son, architects, Exchange, Huddersfield.

MAY 25. — **Oldcastle.** — ALTERATIONS.—Alterations and additions to Moylough Church, Oldcastle. Specification of Messrs. William H. Byrne & Son, architects, 20, Suffolk-street, Dublin.

MAY 25. — **Plymouth.** — ALTERATIONS.—Sundry alterations and works at the Workhouse, Plymouth, for the B.G. Names to the architects, Messrs. Thornely, Rooke, & Barron, 11, The Crescent, Plymouth.

MAY 25.—**Ystradmynach.**—HOUSES.—Erection of 100 to 200 dwelling-houses and the construction of roads, lanes, and sewers for same at Ystradmynach, for the Brynmynach Building Company, Ltd. Mr. R. H. Willson, Licentiate R.I.B.A., Aberaman, Aberdare.

MAY 26.—**Coltishall.**—SCHOOL.—Erection of a new infants' school at Coltishall, for the Norfolk Education Committee. Names to the architects, Messrs. Olley & Haward, 5, Queen-street, Gt. Yarmouth. Deposit, £1 1s.

MAY 26. — **Gobowen.** — ALTERATIONS.—Reconstruction of St. Martin's, Ifton Heath Council School, near Gobowen, and for the erection of a teacher's house. Quantities of Mr. H. E. Wale, Secretary, County Buildings, Shrewsbury. Deposit, £1 1s.

MAY 26. — **Hindley.**—PAINTING.—For painting (*a*) the Leyland Park, Hindley, and (*b*) the Cemetery, Hindley. Particulars of Mr. Oswald P. Abbott, Surveyor to the U.D.C.

MAY 26.—**Hounslow.** PAINTING, ETC.—Painting and repairs at the Mogden Isolation Hospital, near Kneller Hall, Isleworth. Specification of Mr. F. C. Greville-Smith, Clerk to the Committee, 213, High-street, Hounslow.

MAY 26. — **Mildenhall.**—COTTAGE.—Erection of a cottage at West-row, Mildenhall, for the West Suffolk C.C. Specification from the County Architect, Mr. A. Ainsworth Hunt, M.S.A., 51, Abbeygate-street, Bury St. Edmunds.

MAY 26.—**Rotherham.**—SHOPS AND OFFICES.—For the whole of the works, including constructional steel and iron work required in the erection of new shops and other business premises, offices, arcade, etc., situate in Main-street and Domine-lane, Rotherham, for the Masbro' Equitable Pioneers' Society, Ltd. Names to Mr J. Platts, architect, High-street, Rotherham. Deposit, £3 3s.

MAY 26. — **Southgate.**—COTTAGE.—Erection of cottage at the open-air bath, Barrowell Green, for the Southgate U.D.C. Specification from Mr. C. G. Lawson, Surveyor, Council Offices, Palmer's Green, N.

MAY 26.—**Wilnecote.**—CLUB.—Erection of club and house at Hockley-road for the Wilnecote Working Men's Club. Mr. W. H. Bettles, secretary, the Club, Wilnecote.

MAY 27.—**Barnsley.**—PAVILION, ETC.—Erection of sanatorium pavilion and alterations to existing buildings at Mount Vernon, for the Corporation. Specification of Mr. J. H. Taylor, Borough Surveyor, Manor House, Barnsley.

MAY 27.—**Edinburgh.**—ADDITIONS.—Additions to the medical superintendent's house at the City Hospital, Colinton Mains, for the T.C. Quantities of the Architect, Mr. James A. Williamson, A.R.I.B.A., Public Works Office.

MAY 27. — **Hove.**—PAINTING.—(1) Painting the iron fencing, seats, shelter, etc., at the Hove and Aldrington recreation grounds; (2) painting externally the Livingstone-road Baths. Particulars of the Borough Surveyor, Mr. H. H. Scott.

MAY 27.—**Huddersfield.**—HOUSES.—Erection of forty-eight workmen's dwellings (in eight separate blocks) on the Royds Hall Estate, Paddock. Alternate tenders are required (1) in stone; (2) in concrete. Quantities of Mr. K. F. Campbell, M.Inst.C.E., Borough Engineer and Surveyor, 1, Peel-street.

MAY 27.—**Lanchester.**—COTTAGE HOMES.—Erection of cottage homes for the Lanchester B.G. Quantities of Mr. G. T. Wilson, architect, 22, Durham-road, Blackhill.

MAY 27.—**Lanchester.**—PAINTING.—For painting inside of Lanchester Infirmary. Specifications of Mr. G. T. Wilson, architect, 22, Durham-road, Blackhill.

MAY 27.—**Manchester.**—BRICKSETTING.—Raising the two boilers at the Institution in New Bridge-street, Manchester, for the B.G. Particulars of Mr. A. J. Murgatroyd, architect, 23, Strutt-street, Manchester. Deposit, 10s. 6d.

MAY 27. — **Manchester.** — SANATORIUM EXTENSION.—Additions to Administration Block at Baguley Sanatorium. Quantities of the City Architect, Town Hall. Deposit, £1 1s.

MAY 27. — **Stockport.** — ALTERATIONS.—Alterations to Whitehill Hospital for the Corporation. Quantities of Mr. John Atkinson, A.M.Inst.C.E., Borough Surveyor, Town Hall, Stockport.

MAY 27.—**Ulverston.**—WALL.—Construction of a boundary wall (length, about 700 yds.), for the Ulverston U.D.C. Specification of Mr. C. Telford Hague, Surveyor to the Council, Town Hall, Ulverston. Deposit, 10s. 6d.

MAY 28.—**Illogan Downs.**—SCHOOL.—Erection of Sunday-school at Illogan Downs. Particulars of Mr. Sampson Hill, architect, Green-lane, Redruth.

MAY 28.—**Llanbedr.**—CHAPEL.—Erection of new C.M. Chapel at Llanbedr, Merionethshire. Messrs. O. Morris Roberts & Son, M.S.A., architects and surveyors, Portmadoc and Pwllheli.

MAY 28.—**South Ulverston.**—CHURCH.—Erection of new Church of St. Jude, South Ulverston. Quantities of Messrs. Wright & Son, surveyors, Lancaster. Messrs. Austin & Paley, architects, Lancaster.

MAY 29.—**Hull.**—BRIDGE.—Partly taking down and partly rebuilding the Burstwick Hall bridge. Quantities of Messrs. Todd & Thorp, Civil Engineers, Land-of-Green-Ginger, Hull.

MAY 29.—**Newcastle-on-Tyne.**—EXTENSIONS.—For extensions to the school at the cottage homes, Ponteland, for the B.G. Quantities of Mr. Gladstone Walker, Clerk to the Guardians, 127, Pilgrim-street, Newcastle-upon-Tyne. Deposit, 10s.

MAY 29. — **Salford.**—PAINTING.—For painting, etc., required at the Nurses' Home, Eccles Old-road, Pendleton, for the Salford Guardians. Specification from the Steward of the Infirmary, Hope, Pendleton.

MAY 30.—**Boston.**—PAINTING.—For the painting, etc., of Fosdyke County Bridge. Specification of Mr. Henry Moody, District Main Road Surveyor, Council Offices, Sessions House, Boston.

MAY 30. — **Cheadle.** — DRILL HALL.—Construction of a new drill hall, Cheadle, Cheshire, for the Cheshire Territorial Force Association. Quantities of the architects, Messrs. John H. Davies & Sons, 14, Newgate-street, Chester. Deposit, £1 1s.

MAY 30.—**Hoyland.**—VARIOUS.—Repairing the asphalt playground and cloakroom floors, pointing walls, etc., at Hoyland for the West Riding Education Committee. Specifications from Mr. P. H. Swire, Regent-chambers, Barnsley.

MAY 30.—**Lyndhurst.**—BRIDGE.—Construction of Culverley Bridge, near Penerley Gate, entrance to Beaulieu, Hants, in ferro-concrete on the Kahn system, for the New Forest R.D.C. Particulars of Mr. T. E. Smith, Clerk to the Council, Lyndhurst.

MAY 30.—**Torver.**—ADDITIONS.—Erecting a new addition to Torver School. Mr. J. Bell, architect, Coniston.

JUNE 1.—**Arundel.**—COTTAGES.—Erection of ten cottages (two designs), adjoining Wood-view, Arundel, for the T.C. Specification of Mr. Arthur Holmes, Town Clerk, Town Clerk's Office, Arundel.

[Those with an asterisk (*) are advertised in this issue.]

BUILDING, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

* JUNE 1.—**Dover.**—COTTAGES.—The Dover T.C invite tenders for erection of twelve workmen's cottages.

JUNE 1.—**Narberth.**—HOUSES.—The Narberth R.D.C. invite tenders for the erection of thirty houses, in blocks, in the parish of St. Issells. Twelve of the houses are to be erected at Ridgeway, ten at Kingsmoor, and eight near Kilgetty. A separate tender for each group of houses to be sent in. Mr. J. Preece James, Architect and Surveyor, Frogmore, Tenby.

* JUNE 2.—**Aldershot.**—CHURCH-ROOM.—Tenders are invited for the erection of a church-room at North Town.

JUNE 2.—**Truro.**—WIDENING OF DRAWBRIDGE.—For widening of drawbridge in masonry, near Halfway House, Liskeard to Bodmin Main-road. Specifications of Mr. Albert E. Brookes, County Surveyor, County Hall, Truro. Deposit, £1 1s.

JUNE 3.—**Feltwell Anchor Fen.**—ALTERATIONS.—Enlargement of schools and erection of offices for the Norfolk E.C. Quantities of Mr. T. A. Cox, Secretary, Education Offices, Shirehall, Norwich. Deposit, £1 1s.

* JUNE 4.—**Dartmouth Park-hill.**—PAINTING, CLEANSING, AND REPAIRS.—The St. Pancras Guardians invite tenders for painting, cleansing, and repairs.

JUNE 4.—**Halifax.**—CHURCH.—Erection of Congregational church at Highroad Well. Quantities of Messrs. Glendinning & Hanson, architects, 15, Commercial-street, Halifax.

JUNE 4.—**Sheffield.**—TOWN HALL EXTENSION.—Works of all trades required to be done in the extension of the Town Hall. Quantities of the City Architect, Town Hall, Sheffield.

JUNE 6.—**Kingston-on-Thames.**—CONVENIENCE.—Erection of a urinal near the Kingston Hotel, Richmond-road. Specification of the Borough Surveyor, Mr. R. Hampton Clucas, Municipal Offices, Kingston-upon-Thames.

JUNE 6.—**Tewkesbury.**—HOUSES.—Erection of twelve workmen's dwellings at Tewkesbury, for the Corporation. Specifications of the Surveyor, Mr. Ridler, Station-street, Tewkesbury. Deposit, £1 1s.

JUNE 6.—**Windsor.**—NURSES' QUARTERS.—Erection of nurses' quarters at the Windsor Union Workhouse, Old Windsor. Quantities of Messrs. Edgington & Spink, architects, Windsor.

* JUNE 8.—**Basingstoke.**—COTTAGES.—The Basingstoke B.C. invite tenders for erection of twenty-eight cottages.

JUNE 8.—**Droxford.**—PAINTING.—For painting the exterior portion of the Droxford Workhouse, and for executing certain repairs. Mr. H. Godfrey Pearson, Clerk, Bishop's Waltham, Hants.

* JUNE 10.—**Gloucester District.**—REPAIRS, ETC.—The Commissioners of H.M. Works, etc., invite tenders for execution of ordinary works and repairs.

* JUNE 10.—**Southampton District.**—REPAIRS, ETC.—The Commissioners of H.M. Works, etc., invite tenders for ordinary works and repairs.

* JUNE 10.—**Woolwich.**—ALTERATIONS TO POST-OFFICE.—The Commissioners of H.M. Works invite tenders for alterations to Woolwich branch post-office.

* JUNE 11.—**Bermondsey.**—PAINTING, REPAIRING, ETC.—The Bermondsey P.C. invite tenders for painting, repairing, distempering, pointing, etc.

* JUNE 11.—**Bolton District.**—REPAIRS, ETC.—The Commissioners of H.M. Works, etc., invite tenders for execution of ordinary works and repairs.

JUNE 13.—**Sale.**—SCHOOL.—Erection of Urban-road Council School, Sale, for the Cheshire C.C., in accordance with the plans prepared by Messrs. Hoy & Sisley, architects, of 199, Deansgate, Manchester. Quantities of the quantity surveyors, Messrs. F. Hewitt & Son, of 33, Brazennose-street, Manchester. Deposit, £1 1s.

JUNE 15.—**Axminster.**—BRIDGE.—Construction of a new bridge over the River Yarty, adjoining the existing Beckford Bridge, near Axminster, for the Devon C.C. Quantities of Mr. W. P. Robinson, County Surveyor, 22, Queen-street, Exeter.

* JUNE 15.—**Farnham.**—WORKSHOPS AND ALTERATIONS.—The Guardians of Farnham Union invite tenders for erection of their workshops and alterations to dining-hall.

* JUNE 15.—**Hitchin.**—TECHNICAL SCHOOL, ETC.—Tenders are invited for the erection of a technical school buildings and alterations to existing buildings.

* JUNE 23.—**St. Albans.**—ADDITIONS AND ALTERATIONS.—The Visiting Committee of the Hertfordshire County Asylum invite tenders for additions and alterations to the County Asylum.

NO DATE.—**Bala.**—ALTERATIONS.—Extensive alterations and additions to Bryngroes, Bala, Merionethshire, for Major R. T. Anwyl-Passingham. Specification of the architects, Messrs. Deakin & Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

NO DATE.—**Barmouth.**—HOUSE.—Erection of residence at Llanaber, near Barmouth, for Mr. Ernest Hooper. Messrs. Dallas & Lloyd, 45, Newhall-street, Birmingham.

NO DATE.—**West Bowling.**—PICTURE HOUSE.—For mason's, joiner's, plasterer's, and plumber's work in the erection of a picture house at West Bowling. Quantities of Mr. Thomas Riley, architect and surveyor, 81, Beckside-road, Lidget Green, Bradford.

NO DATE.—**Bradford.**—CHURCH.—Erection of St. William's Church, Ingleby-road, Bradford. Quantities of Mr. W. H. Herbert Martin, Licentiate R.I.B.A., 3, Cookridge-street, Leeds.

NO DATE.—**Burnopfield.**—HOUSES.—Erection of two houses at Burnopfield. Particulars of Mr. J. Cockburn, East Pontop, Annfield Plain.

NO DATE.—**Bury St. Edmunds.**—HOUSES.—Erection of a pair of houses, York-road, Bury St. Edmunds. Quantities from Mr. Sidney Naish, M.S.A., architect, 7, Hatter-street, Bury St. Edmunds. Deposit, £1 1s.

NO DATE.—**Clay Cross.**—CHURCH, ETC.—Erection of a Primitive Methodist church and school at Hepthorne-lane, Clay Cross. Quantities of Messrs. T. E. Davidson & Son, architects, 6, Grainger-street, Newcastle-on-Tyne.

NO DATE.—**Eglwysfach.**—CHANCEL.—Building a chancel to Eglwysfach Church. Specification of the architects, Messrs. Deakin & Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

NO DATE.—**Glyndyfrdwy.**—SCHOOL, ETC.—Erection of a new Council school and headmaster's house at Glyndyfrdwy, near Llangollen. Specification of the County Architects, Messrs. Deakin & Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

NO DATE.—**Hull.**—FARMHOUSE.—Erection of farmhouse and buildings at Wawne, Hull. Particulars of the architect, Mr. J. Empson Tindall, Wawne, Hull.

NO DATE.—**Shotton Colliery.**—THEATRE.—Erection of theatre at Shotton Colliery for Mr. R. Crow. Plans at the Royal George Hotel, Old Shotton.

NO DATE.—**Talybont.**—HOUSE.—Erection of house near Talybont, Cardiganshire, for Dr. John James, of Lodge Park. Specifications of Messrs. Deakin & Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

FURNITURE, MATERIALS, etc.

MAY 23.—**Birmingham.**—SCHOOL FURNITURE.—Supply of school furniture for the next three years, for the Birmingham Education Committee. Forms of tender of Mr. Jno. Arthur Palmer, Secretary of Education, Education Office, Council House, Margaret-street. Deposit, £1 1s.

MAY 25.—**Cannock.**—DESKS.—Supply to the Cannock E.C. of 150 dual desks for upper standards in elementary schools; also tables and chairs for the accommodation of forty infants. Mr. William E. Swift, Secretary, Council Offices, Cannock.

MAY 25.—**Chelmsford.**—GRANITE.—The Guardians of the Chelmsford Union require 250 tons of rough granite for breaking by casual paupers. Forms of tender of Mr. Arthur S. Duffield, Clerk, 96, High-street, Chelmsford.

MAY 25.—**Warrington.**—PITCH BOILER.—Pitch boiler having a capacity of 300 gallons, for the Corporation. Forms of tender of the Borough Surveyor, Town Hall.

* MAY 27.—**Battersea.**—CAST-IRON HOT-WATER PIPES, ETC.—The Battersea B.C. invite tenders for a quantity of 5-in. light cast-iron hot-water pipes, with loose oval flanges, cast-iron flanged tees, etc.

MAY 27.—**Hyde.**—FURNITURE.—(1) Furniture and (2) fittings required for Town Hall extension. Specifications of Mr. J. H. Fletcher, architect, 45, Clarendon-place, Hyde.

MAY 27.—**London.**—RAILWAY STORES.—Supply of certain new stores for six and twelve months from July 1 next for the Great Northern Railway Company. Forms of tender for each contract of Mr. Weeks, the Stores Superintendent, Doncaster.

MAY 27.—**Manchester.**—SCHOOL FURNITURE.—Supply of school furniture at the Municipal School of Domestic Economy, High-street, C.-on-M., Manchester. Specifications at the offices in Deansgate, Manchester. Deposit, £1 1s.

MAY 27.—**Walthamstow.**—ASPHALT, ETC.—Trinidad asphalt macadam, Trinidad Lake bitumen, etc., for the Walthamstow U.D.C. Specification of Mr. E. Morley, Surveyor to the Council, Town Hall, Walthamstow.

* JUNE 6.—**Hove.**—BOOK SHELVES AND CUPBOARDS.—The Hove B.C. invite tenders for providing and fitting up book shelving and cupboards.

ENGINEERING, IRON, AND STEEL.

MAY 25.—**Glasgow.**—COKE BUNKER.—Construction in ferro-concrete of a twin coke bunker at Dalmarnock Gasworks, Glasgow. Specifications of Mr. Alex. Wilson, Engineer, Gas Department, 45, John-street, Glasgow.

MAY 25.—**Horncastle.**—BOILER.—Supply and fixing a "Savile" boiler in the Casual Wards at the Workhouse, for the Horncastle Board of Guardians. Particulars can be obtained on application to the Master of the Workhouse. Mr. J. E. Chatterton, Clerk, Horncastle.

MAY 25.—**Portsmouth.**—LANDING-STAGE.—Reconstructing the landing-stage and steps to the Sally Port, Broad-street, Portsmouth. Specification at the Borough Engineer's Office at the Town Hall.

MAY 25.—**Withernsea.**—SEA WALL.—Erection of a reinforced-concrete sea wall at South Cliff, Withernsea, the total length being about 152 yds., for the Withernsea U.D.C. Specification of Mr. John B. Kirton, Engineer to the Council, Council Offices, Withernsea. Deposit, £2 2s.

MAY 26.—**Gourock.**—TANK.—Construction of gasholder and steel tank for the T.C. Specifications of Mr. A. Douglas Murray, Town Clerk, Gourock. Deposit, £2 2s.

MAY 26.—**Warrington.**—RAILS, ETC.—For supply of (1) 100 tons tram rails (Sandberg steel); (2) special track work, for the Warrington Corporation. Specification from the Tramways Manager, Car Sheds, Mersey-street, Warrington.

MAY 27.—**Hull.**—IRONWORK.—Supply and erection of the ironwork of pig, sheep, and cattle pens, and alterations to existing pens, for the Corporation. Forms of tender of Mr. A. E. White, M.Inst.C.E., City Engineer, Guildhall, Hull. Deposit, £1.

MAY 27.—**Manchester.**—RAILINGS.—Supplying and fixing of wrought-iron railings at the Municipal School of Domestic Economy, High-street, C.-on-M., Manchester. Specifications at the Education Offices, Deansgate, Manchester. Deposit, £1 1s.

MAY 28.—**Bedford.**—CONDUIT, ETC.—Laying a 21-in. conduit from the river to the electricity works and for the construction of a screening chamber and cold well extension for the Corporation. Specifications, etc., of Mr. R. W. L. Phillips, Borough Electrical Engineer, Cauldwell-road, Bedford.

MAY 28.—**Bedford.**—PIPE WORK.—Supply and erection of steam and other pipe work for the Electricity Department of the Corporation. Specification of Mr. R. W. L. Phillips, Borough Electrical Engineer.

MAY 28.—**Cardiff.**—TANK.—Supply and erection of sundry steel and cast-iron pipe work and small feed tank for the Corporation. Specifications of Mr. Arthur Ellis, Electric Engineer and Manager, Central Offices, Cardiff. Deposit, £1 1s.

MAY 28.—**Denton.**—RIVER WALL.—Raising of the river wall about half a mile in length, in the Parish of Denton, with Kentish ragstone and clinker, for the Commissioners of Sewers. Specification of Messrs. R. B. Grantham & Son, civil engineers, 5, Little College-street, Westminster Abbey, S.W. Deposit, £2 2s.

MAY 28.—**Hemel Hempsted.**—PIPES.—Supply to the Corporation of cast-iron pipes during the twelve months ending May 31, 1915. Specification from Mr. Walter R. Locke, Borough Surveyor and Waterworks Engineer, Hemel Hempsted.

MAY 28.—**Manchester.**—BOILER.—Supply and erection of a new steel boiler for No. 4 locomotive crane at the Rochdale-road Station of the Manchester Corporation Gas Department. Particulars of Mr. Fredk. A. Price, Superintendent, Gas Department, Town Hall, Manchester.

JUNE 1.—**Aberdeen.**—QUAY.—Construction of a timber wharf, about 547 ft. long, and relative works, at Waterloo Quay, for the Harbour Commissioners. Quantities of Mr. R. Gordon Nicol, Engineer, Harbour Engineer's Office, Aberdeen.

JUNE 1.—**Canada.**—GRAIN ELEVATOR.—The Canadian Government invites tenders for the construction of a reinforced concrete grain elevator at Calgary, Alberta. Specifications, etc., at the office of the High Commissioner for Canada, 17, Victoria-street, London, S.W.

JUNE 1.—**Lamington.**—RAILWAY WORKS.—Strengthening of the viaduct carrying the main line over the River Clyde, near Lamington, for the Caledonian Railway Company. Quantities of Mr. J. Blackburn, Secretary, Caledonian Railway Company's Offices, 302, Buchanan-street, Glasgow. Deposit, £2 2s.

ROAD, SANITARY, AND WATER WORKS.

MAY 23.—**Eccles.**—SEWERAGE.—(1) (*a*) The construction of a 6-ft. by 5-ft. outfall sewer, catch-pit, storm overflow manhole, junction manhole, etc.; (*b*) screening and raking apparatus, detritus elevators, machinery, and engines; (*c*) penstocks. (2) The construction of a 7-ft. 6-in. circular storm overflow sewer in open cutting and tunnel and manholes, etc., for the Corporation. Quantities of the Borough Engineer, Mr. Thomas S. Picton. Deposit of £3 for Contract No. 1 (*a*), £2 each for (*b*) and (*c*), and £3 for Contract No. 2.

MAY 25.—**Basford.**—SEWERS.—Providing and laying about 1,200 yds. of 9-in. stoneware pipe sewers, with Hassall's joints, together with the necessary manholes, etc., in the parish of Gedling, for the R.D.C. Quantities from Mr. S. Maylan, Engineer and Surveyor, Public Offices, Basford, Nottingham. Deposit, £2 2s.

MAY 25.—**Basford.**—WATER MAINS.—Providing and laying about 4,500 yds. of cast-iron water mains, for the R.D.C. Quantities from Mr. S. Maylan, Engineer and Surveyor, Public Offices, Basford, Nottingham. Deposit, £2 2s.

MAY 25.—**Chester.**—SEWER.—Construction of about 334 yds. of sewer for the Chester R.D.C. Quantities from Mr. C. J. F. Owen, 10, Batchelors-lane, Dee Banks, Chester.

MAY 25.—**Disley.**—SEWER.—Laying of about 320 yds. of 9-in. and 6-in. pipe sewer, together with the necessary manholes, etc., for the extension of the sewer in Jackson Edge-road, Disley, for the R.D.C. Quantities of the Surveyor, Mr. C. S. Righton, Market-street, Marple.

MAY 25.—**Exeter.**—WOOD-PAVING.—For paving a portion of the carriageway in Sidwell-street with creosoted wood blocks, including the necessary excavation and concrete foundation. Quantities of Mr. Thos. Moulding, M.Inst.C.E., City Engineer and Surveyor, Exeter. Deposit, £1 1s.

MAY 25.—**Harrogate.**—STREET WORKS.—For the private street improvement works in Wordsworth-crescent, for the Corporation. Quantities of Mr. C. E. Rivers, A.M.Inst.C.E., Borough Engineer and Surveyor, Municipal Offices, Harrogate.

MAY 25.—**Knaresborough.**—DRAINAGE.—Construction of a main drain, with branch drains, etc., at sewage farm of the U.D.C. Specifications of Mr. E. Prest, Surveyor, Council Offices, Knaresborough.

MAY 25.—**Leek.**—SEWERAGE.—Provision, laying, and jointing of about 5,740 yds. of 9-in. and 6-in. stoneware pipe sewers; also the construction of manholes and flushing chambers, engine house and pump well, liquefying tanks, bacteria beds, sludge beds, approach road, and other incidental works, for the Leek U.D.C. Quantities of the engineers, Messrs. Willcox & Raikes, 63, Temple-row, Birmingham. Deposit, £3 3s.

MAY 25.—**Lytham.**—STREET WORKS.—For making-up Lake-road, St. Paul's-avenue, and Arcadia-road, for the U.D.C. Quantities from the Council's Surveyor. Deposit, £1 1s.

[Those with an asterisk (*) are advertised in this issue.]

ROADS, etc.—*continued*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

MAY 25.—**Manchester.**—SANITARY WORK.—For sanitary arrangements at the Cottage Homes, Styal, near Manchester, for the South Manchester Board of Guardians. Specifications of Mr. F. H. Overmann, F.M.S.A., 49, King-street, Manchester. Deposit, 10s. 6d.

MAY 25.—**Nuneaton.**—WATER SUPPLY.—(1) Construction of a covered reservoir, 50,000 gallons, in Hennebique ferro-concrete (by duly licensed contractors), with other works appurtenant thereto; (2) laying of about 710 yds. 3-in. and 1,520 yds. 4-in. cast-iron mains; (3) providing about 750 yds. 3-in. and 1,550 yds. 4-in. cast-iron pipes and specials, for the Nuneaton R.D.C. Quantities from Mr. F. C. Cook, A.M.Inst.C.E., Nuneaton, Engineer to the Council. Deposit, £1 each contract.

MAY 25.—**Rowley Regis.**—ROADS.—For improvement of Powke-lane for the U.D.C. Specification at the Council House, Old Hill, Staffordshire.

MAY 25.—**Wakefield.**—SEWERAGE WORKS.—(1) The construction of a main outfall sewer in the Pugneys Valley, from Portobello Mills to Newmillerdam, comprising 4,000 yds., or thereabouts, of pipe sewers, varying in diameter from 24 in. to 12 in., and the necessary pumping-station; and (or) for (2) the construction of subsidiary branch sewers in the western area of Sandal, comprising 5,800 yds., or thereabouts, of pipe sewers, varying in diameter from 24 in. to 6 in. Names to Mr. A. C. Alibone, Town Clerk, Town Hall, Wakefield.

MAY 26.—**Coldstream.**—WELL.—Sinking and lining a collecting well, about 15 ft. diameter, and other relative works, for the T.C. Schedule of the engineers, Messrs. J. & A. Leslie & Reid, C.E., 72a, George-street, Edinburgh. Deposit, £1.

MAY 26.—**Dunmow.**—TAR-PAINTING.—For tar-painting about 2,000 super. yds. of road in Felstead village, for the Dunmow R.D.C. Mr. A. E. Floyd, Clerk, Dunmow.

MAY 26.—**Farnborough.**—STREET WORKS.—(*a*) Construction of sewers in Cambridge-road; (*b*) making-up Closeworth-road for the U.D.C. Quantities of Mr. E. Hargreaves, Surveyor, Town Hall, Farnborough.

MAY 26.—**Gateshead.**—PAVING.—For paving, etc., Back Lavender-gardens East, for the T.C. Quantities of Mr. N. P. Pattinson, Borough Engineer, Town Hall, Gateshead.

MAY 26.—**Great Crosby.**—SEWER.—Laying of about 600 yds. of pipe sewer along Forefield-lane, for the Great Crosby U.D.C. Quantities from Mr. Joseph A. Wright, Surveyor, Council Offices, Great Crosby.

MAY 26.—**Kiveton.**—SEWERAGE.—Construction of sewers at Dinnington for the Kiveton Park R.D.C. Quantities of Mr. Frank Hewitt, F.S.I., Engineer and Surveyor to the Council, Council Offices, Kiveton Park, near Sheffield. Deposit, £2 2s.

MAY 26.—**Sale.**—SEWER.—Laying of a 9-in. sewer, about 133 yds. in length, between Clarendon-road and Beech-road, for the Sale U.D.C. Quantities of Mr. W. Holt, A.M.Inst.C.E., Council Offices, Sale.

MAY 26.—**Tavistock.**—WATER SUPPLY.—(1) Alteration of intake and 10-in. main at Kilworthy; (2) alteration of intake at Sandypark, and providing and laying 607 yds. of 6-in. iron main; (3) providing and laying 517 yds. of 3-in. and 4-in. iron mains in Watte-road and Launceston-road; (4) providing and laying 1,606 yds. of 4-in. iron main on Whitchurch Down and Chollacott-lane. Specification of Mr. F. Camble, Surveyor, Council Offices, Tavistock.

MAY 26.—**Tottenham.**—STREET WORKS.—Making up Boundary-road (remainder) and Clifton-gardens for the Tottenham U.D.C. Forms of tender of Mr. W. H. Prescott, M.Inst.C.E., Town Hall, Tottenham. Deposit, £5 each road.

MAY 26.—**West Hartlepool.**—STREET WORKS.—Making-up of certain streets, for the Corporation. Quantities of Mr. N. F. Dennis, Borough Engineer, Municipal Buildings.

MAY 29.—**Cannock.**—SEWERS.—Provision and laying of about 110 yds. of 12-in. and 2,098 yds. of 9-in. diameter stoneware pipe sewers, etc. Quantities of the Council's Engineer and Surveyor, Mr. Robert Blanchard, Council Offices, Church-street, Cannock. Deposit, £2.

MAY 29.—**Queenstown.**—WATER SUPPLY.—Laying of a new 8-in. cast-iron main from Tabbotstown to Carrignafoy, together with the supply of all pipes, valves, and fittings, etc., for the U.D.C. Quantities, etc., of the Town Clerk, Queenstown. Deposit, £5 5s.

MAY 30.—**Bedale.**—WATERWORKS.—Providing and laying of 550 lin. yds. of 1½-in. cast-iron water mains, with valves, hydrants, and other works, for the Bedale R.D.C. Quantities from the engineers, Messrs. Fairbank & Son, C.E., of Lendal-chambers, York. Deposit, £1 1s.

MAY 30.—**Cavan.**—WATER WORKS.—Supply and laying of about 4,900 yds. of 8-in. cast-iron pipes, with valves, etc., and the construction of additional filter beds, with all appurtenant works, for the Cavan U.D.C. Quantities of Messrs. Swiney & Croasdaile, MM.Inst.C.E., Avenue-chambers, Belfast. Charge, £1 1s.

MAY 30.—**Cowbridge.**—ROADS.—For widening of Old Mill-road, St. Athan, for the Cowbridge R.D.C. Quantities of the Surveyor, Mr. George E. Morris, Kingscombe, Llanblethian, near Cowbridge. Deposit, £2 2s.

JUNE 1.—**Chard.**—WATER SUPPLY.—Construction of covered reservoir, well, tunnel, and the laying of 7-in., 5-in., 4-in., 3-in., and 2½-in. cast-iron water-mains, together with valves, hydrants, and other castings, for the Corporation. Quantities of Messrs. Dodd & Dodd, MM.Inst.C.E., County-chambers, Corporation-street, Birmingham. Deposit, £5 5s.

JUNE 1.—**Pontypridd.**—STREET WORKS.—Making up (1) Jenkins-street; (2) lane at rear of Tram-road; (3) Landraw-road, for the Pontypridd U.D.C. Specification of Mr. W. E. Lowe, Engineer and Surveyor, Municipal-buildings, Pontypridd. Deposit, £1 each contract.

JUNE 2.—**Bedlingtonshire.**—PIPES.—Supply of about 650 yds. of 9-in. cast-iron water pipes and 600 yds. of 4-in. cast-iron water pipes. Specification of the Surveyor, Mr. J. E. Johnston, Bedlington.

JUNE 2.—**Thurlstone Townhead.**—For asphalting school yard of Thurlstone Townhead Council School. Mr. William Wood, Divisional Clerk, Penistone.

* JUNE 15.—**Hendon.**—SEWAGE DISPOSAL AND SEWERAGE.—The Hendon U.D.C. invite tenders for certain works of sewage disposal and sewerage.

* JUNE 15.—**Manchester.**—MAIN DRAINAGE WORK.—The Manchester Corporation invite tenders for construction of main drainage work.

Public Appointments.

* MAY 26.—INSTRUCTOR OF ARCHITECTURAL DESIGN, ETC.—The Leicester E.C. invite applications for the above post. Salary, £200.

* MAY 26.—ARCHITECTURAL DRAUGHTSMAN.—The Gloucestershire E.C. invite applications for the above post. Salary, £2 per week.

* MAY 27.—ARCHITECTURAL ASSISTANTS.—The Essex C.C. invite application for the above posts Salary, £130 and £100 respectively.

* MAY 29.—QUANTITY SURVEYOR.—The Barrow-in-Furness B.C. invite applications for the above temporary post.

* MAY 30.—ASSISTANT HANDICRAFT INSTRUCTOR.—The London C.C. invite applications for above post. Commencing salary, £80 per annum.

* JUNE 2.—ARCHITECTURAL DRAUGHTSMAN.—The Southampton C.C. invite applications for the above post. Salary, £104 per annum.

* JUNE 2.—ASSISTANT QUANTITY SURVEYOR AND ACCOUNTANT.—The Southampton C.C. invite applications for the above post. Commencing salary, £104 per annum.

* JUNE 2.—TEMPORARY QUANTITY SURVEYOR AND ACCOUNTANT.—The Southampton C.C. invite applications for the above post. Salary, £130 per annum.

* JUNE 2.—TEMPORARY DRAUGHTSMAN.—The Southampton C.C. invite applications for the above post. Salary, £130 per annum.

* NO DATE.—CLERKS OF WORKS.—The Manchester Rivers Committee invite applications for the above post. Salary, £3 3s. per week.

Auction Sales.

* MAY 26—**Rugby.**—Mr. W. J. Peddell will sell by auction, on the site, builder's plant and machinery.

* MAY 27.—Messrs. Churchill & Sim will sell by auction, at the Great Hall, Winchester House, Old Broad-street, E.C., an assortment of deals, battens, boards, timbers, etc.

* MAY 28.—**Edgware.**—Messrs. Humbert & Flint will sell by auction, at the Crown Hotel, Cricklewood, a freehold residence, seventy-seven plots of freehold building land, and four pairs of freehold residences.

* MAY 28.—**Newington.**—Messrs. Jackson & Sons will sell by auction, on the premises, a brickfield plant and effects.

* MAY 28.—**Stamford Hill.**—Messrs. E. Fox, Burnett, & Baddeley will sell by auction, at the Mart, seven blocks of freehold land.

* JUNE 5.—**Crouch Hill.**—Mr. W. B. Hallett well sell by auction, at the Mart, several freehold properties.

* JUNE 8.—**Essex.**—Messrs. Kinsley will sell by auction, at the Mart, freehold building estates.

* JUNE 9.—**Finchley.**—Mr. E. Owers will sell by auction, at the Mart, freehold building land.

* JUNE 11.—**Stanmore.**—Messrs. Farebrother, Ellis, & Co. will sell by auction, at the Mart, freehold building land.

* JUNE 10.—**Islington.**—Messrs. E. Fox, Burnett, & Baddeley will sell by auction, at the Mart, a freehold building site.

* JUNE 12.—**Wimbledon.**—Messrs. Mabbett & Edge will sell by auction, at the Mart, a building site.

* JUNE 16.—**Ilford.**—Daniel Smith Son, & Oakley will sell by auction, at the Mart, a freehold building estate.

* JUNE 23.—**Killingdon and Uxbridge.**—Messrs. Knight, Frank, & Rutley will sell by auction, at 20, Hanover-square, W., a building estate.

* JUNE 24.—**Clifford's Inn.**—Messrs. E. Fox, Burnett, & Baddeley will sell by auction, at the Mart, a building site.

* JUNE 24.—**Westminster.**—Messrs. Fuller, Horsey, Sons, & Cassell will sell by auction, at the Mart, a leasehold builder's and contractor's works, with plant and machinery.

[Those with an asterisk (*) are advertised in this issue.]

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.

	£	s.	d.
Best Stocks	1	16	6
Picked Stocks for Facings	2	10	0

Per 1000, Delivered at Railway Depôt.

	£	s.	d.
Flettons	1	14	0
Best Fareham Red	3	12	0
Best Red Pressed Ruabon Facing	5	0	0
Best Blue Pressed Staffordshire	3	15	0
Do. Bullnose	4	0	0
Best Stourbridge Fire Bricks	4	0	0

GLAZED BRICKS—

	£	s.	d.
Best White, Ivory, and Salt Glazed Stretchers	12	7	6
Headers	11	17	6
Quoins, Bullnose and 4½ in. Flats	15	17	6
D'bleStr'tch'rs	17	17	6
Double Headers	14	17	6
One Side and two Ends	18	17	6
Two Sides and one End	19	17	6
Splays and Squints	17	7	6

Second Quality £1 10s. per 1000 less than best.

	s.	d.	
Thames and Pit Sand	7	0	per yard, delivered.
Thames Ballast	5	9	" "
Best Portland Cement	37	0	per ton, "
Best Ground Blue Lias Lime	20	0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 14s. 0d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

Per Ft. Cube.

	s.	d.
BATH STONE—delivered on road waggons, Paddington Depôt	1	7½
Do. do. delivered on road waggons, Nine Elms Depôt	1	9½
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	4½
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	6½

Per Ft. Cube, delivered at Railway Depôt.

	s.	d.		s.	d.
Ancaster in blocks	1	10	Closeburn Red Freestone	2	0
Beer in blocks	1	6	Red Mansfield Freestone	2	4
Greenshill in blocks	1	10	Talacre & Gwespyr Stone	2	4
Darley Dale in blocks	2	4			
Red Corsehill in blocks	2	3			

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt.	s.	d.
Scappled random blocks	2	10

Per Ft. Super., Delivered at Railway Depôt.

	s.	d.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8
6 in. rubbed two sides ditto, ditto	2	6
3 in. sawn two sides slabs (random sizes)	0	11½
2 in. to 2½ in. sawn one side slabs (random sires)	0	7
1½ in. to 2 in. ditto, ditto	0	6

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.	s.	d.
Scappled random blocks	3	0

Per Ft. Super., Delivered at Railway Depôt.

	s.	d.
6 in. sawn two sides landing to sizes (under 40 ft. super.)	2	6
6 in. rubbed two sides ditto	3	0
3 in. sawn two sides slabs (random sizes)	1	2
2 in. self-faced random flags	0	5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£	s.	d.	In. In.	£	s.	d.
20 x 10 best blue Bangor	13	2	6	20 x 10 best Eureka unfading green	15	17	6
20 x 12 ditto	13	17	6	20 x 12 ditto	18	7	6
20 x 10 1st q'lity ditto	13	0	0	18 x 10 ditto	13	5	0
20 x 12 ditto	13	15	0	16 x 8 ditto	10	5	0
16 x 8 ditto	7	5	0	20 x 10 permanent green	11	12	6
22 x 10 best blue Portmadoc	12	12	6	18 x 10 ditto	9	12	6
16 x 8 ditto	6	12	6	16 x 8 ditto	6	12	6

TILES.

At Railway Depôt.

	s.	d.		s.	d.
Best plain red roofing (per 1000)	42	0	Best "Hartshill" brand plain sand-faced (per 1000)	45	0
Hip and Valley (per doz.)	3	7	Do. pressed (per 1000)	42	6
Best Broseley (per 1000)	50	0	Do. Ornamental (per 1000)	47	6
Do. Ornamental (per 1000)	52	6	Hip (per doz.)	4	0
Hip and Valley (per doz.)	4	0	Valley (perdoz.)	3	6
Best Ruabon red brown, or brindle (Edw'ds)(pr1000)	57	6	Staffords. (Hanley) Reds or Brindled (per 1000)	42	6
Do. Ornamental (per 1000)	60	0	Hand-made sand-faced (per 1000)	45	0
Hip (per doz.)	4	0	Hip (per doz.)	4	0
Valley (perdoz.)	3	0	Valley (per doz.)	3	6

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15	0	0 ..	16	10	0
Deals: best 3 in. by 9 in.	15	0	0 ..	16	10	0

WOOD (*Continued*).

BUILDING WOOD (*Continued*)—	At per standard. £ s. d.		£ s. d.
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	12 10 0	..	13 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0		less than 7 in. and 8 in.
Deals: seconds	1 0 0		less than best
Battens: seconds	0 10 0	"	"
2 in. by 4 in. and 2 in. by 6 in.	11 10 0	..	12 10 0
2 in. by 4½ in. and 2 in. by 5 in.	10 10 0	..	11 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0		more than battens.
¼ in.	1 0 0		"
Fir timber: best middling	At per load of 50 ft.		
Dantzig or Memel (average specification)	5 0 0	..	6 5 0
Seconds	4 10 0	..	5 0 0
Small timber (8 in. to 10 in.)	3 17 6	..	4 0 0
Small timber (6 in. to 8 in.)	3 5 0	..	3 10 0
Swedish balks	2 12 6	..	3 0 0
Pitch-pine timber (50 ft. average)	7 0 0	..	8 0 0

JOINERS' WOOD.	At per standard.		
White Sea: first yellow deals, 3 in. by 11 in.	26 0 0	..	27 0 0
3 in. by 9 in.	24 0 0	..	25 0 0
Battens, 2½ in. and 3 in. by 7 in.	18 10 0	..	19 10 0
Second yellow deals, 3 in. by 11 in.	21 10 0	..	22 10 0
Do. 3 in. by 9 in.	20 0 0	..	21 0 0
Battens, 2½ in. and 3 in. by 7 in.	15 0 0	..	16 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	16 0 0	..	17 0 0
Battens, 2½ in. and 3 in. by 7 in.	14 0 0	..	15 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	23 0 0	..	24 0 0
Do. 3 in. by 9 in.	20 0 0	..	21 0 0
Battens	15 0 0	..	16 0 0
Second yellow deals, 3 in. by 11 in.	17 10 0	..	18 10 0
Do. 3 in. by 9 in.	16 0 0	..	17 0 0
Battens	12 10 0	..	13 10 0
Third yellow deals, 3 in. by 11 in.	14 0 0	..	15 0 0
Do. 3 in. by 9 in.	13 10 0	..	14 10 0
Battens	11 10 0	..	12 10 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	16 10 0	..	17 10 0
First white deals, 3 in. by 9 in.	14 10 0	..	15 10 0
Battens	13 0 0	..	13 10 0
Second white deals, 3 in. by 11 in.	14 10 0	..	15 10 0
Second white deals, 3 in. by 9 in.	13 0 0	..	14 0 0
Battens	12 0 0	..	12 10 0
Pitch-pine: deals	28 0 0	..	30 0 0
Under 2 in. thick extra	0 10 0	..	1 0 0
Columbian or Oregon Pine, best quality	24 0 0	..	26 10 0
Yellow Pine—First, regular sizes	50 0 0		upwards.
Oddments	35 0 0		"
Seconds, regular sizes	36 0 0		"
Oddments	31 0 0		"
Kauri Pine—Planks per ft. cube	0 6 6	..	0 7 6
Dantzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	..	0 3 9
Small " "	0 2 6	..	0 3 0
Wainscot Oak Logs, per ft. cub.	0 8 0	..	0 10 0
Dry Wainscot Oak, per ft. super. as inch	0 0 10	..	0 1 2
¾ in. do. do.	0 0 9	..	0 1 0
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 10	..	0 1 3
Selected, Figury, per ft. super. as inch	0 1 6	..	0 2 6
Cuba Mahogany	0 1 4	..	0 2 6
			upwards.
Dry Walnut, American, per ft. super. as inch	0 0 10	..	0 1 2
French, "Italian," Walnut	0 0 10	..	0 1 4
Teak, per load (Rangoon or Moulmein)	25 0 0	..	31 0 0
Do., do. (Java)	22 0 0	..	25 0 0
American Whitewood planks, per ft. cube	0 6 0	..	0 7 0
Prepared Flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 14 6	..	0 18 0
1 in. by 7 in. yellow, planed and matched	0 14 9	..	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 17 6	..	1 3 0
1 in. by 7 in. white, planed and shot	0 14 0	..	0 16 0
1 in. by 7 in. white, planed and matched	0 14 3	..	0 16 6
1¼ in. by 7 in. white, planed and matched	0 16 6	..	0 18 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed boards	0 12 6	..	0 15 0
1 in. by 7 in. " "	0 15 0	..	0 18 6
¾ in. by 7 in. white " "	0 12 0	..	0 14 0
1 in. by 7 in. " "	0 14 6	..	0 16 6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	9 0 0	..	10 0 0
Compound Girders, ordinary sections	11 0 0	..	12 0 0
Steel Compound Stanchions	12 0 0	..	13 0 0
Angles, Tees, and Channels, ordinary sections	11 0 0	..	12 0 0
Pitch Plates	11 0 0	..	12 0 0
Cast Iron Columns & Stanchions, including ordinary patterns	8 10 0	..	9 0 0

METALS.

IRON—	Per ton, in London. £ s. d.		£ s. d.
Common Bars	9 0 0	..	9 10 0
Staffordshire Crown Bars, good merchant quality	9 5 0	..	9 15 0
Staffordshire "Marked Bars"	11 0 0	..	—
Mild Steel Bars	9 5 0	..	9 15 0
Hoop Iron, basis price	10 0 0	..	—
" " Galvanised	17 10 0	..	—
(* And upwards, according to size and gauge.)			
Sheet Iron Black— Ordinary sizes to 20 g.	10 5 0	..	—
" " 24 g.	11 5 0	..	—
" " 26 g.	12 15 0	..	—
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 10 0	..	—
Ordinary sizes to 22 g. and 24 g.	16 0 0	..	—
Ordinary sizes to 26 g.	17 0 0	..	—
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	18 10 0	..	—
" " 22 g. and 24 g.	19 0 0	..	—
Ordinary sizes to 26 g.	20 10 0	..	—
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g.	15 0 0	..	—
Ordinary sizes, 22 g. and 24 g.	15 5 0	..	—
Ordinary sizes, 26 g.	16 15 0	..	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 10 0	..	—
Best Soft Steel Sheets, 22 g. & 24 g.	13 10 0	..	—
Best Soft Steel Sheets, 26 g.	15 10 0	..	—
Cut Nails, 3 in. to 6 in.	11 0 0	..	11 10 0
(Under 3 in., usual trade extras.)			

LEAD, &c.

	Delivered in London. £ s. d.		
LEAD—Sheet, English, 4 lb. and up	22 0 0	..	—
Pipe in coils	22 10 0	..	—
Soil pipe	25 10 0	..	—
Compo pipe	25 10 0	..	—
ZINC—Sheet—	In casks of 10 cwt.		
Vieille Montagne	28 0 0	..	—
Silesian	27 10 0	..	—
Zinc, in bundles, 1s. per cwt. extra.			
COPPER— Strong Sheet per lb.	0 1 2	..	—
Tin "	0 1 2	..	—
Copper nails "	0 1 1	..	—
Copper wire "	0 1 1	..	—
BRASS— Strong Sheet per lb.	0 1 1	..	—
Thin "	0 1 2	..	—
TIN—English Ingots "	0 1 10	..	—
SOLDER—Plumbers' "	0 0 10	..	—
Tinmen's "	0 1 1	..	—
Blowpipe "	0 1 3	..	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

15 oz. thirds	2½d.	26 oz. fourths	3½d.
" fourths	2d.	32 oz. thirds	5½d.
21 oz. thirds	3½d.	" fourths	4½d.
" fourths	3d.	Fluted Sheet, 15 oz.	3d.
26 oz. thirds	4½d.	" 21 oz.	4d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

¼ Rolled plate	2½d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral white	3½d.
⅛ Rough rolled and rough cast plate	2½d.		
¼ Rough rolled and rough cast plate	3d.	Ditto, tinted	5d.

* Not less than two crates.

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes per gallon		0 2 2
" " " in barrels "		0 2 3
" " " in drums "		0 2 5
Boiled " " in barrels "		0 2 5
" " " in drums "		0 2 8
Turpentine in barrels "		0 2 8
" in drums "		0 2 10
Genuine Ground English White Lead, per ton		29 15 0
(In not less than 5 cwt. casks.)		
Red Lead, Dry per ton		28 0 0
Best Linseed Oil Putty per cwt.		0 9 0
Stockholm Tar per barrel		1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 9
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 6
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 6
French and Brush Polish	0 10 0

TO CORRESPONDENTS.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 6 p.m. on Wednesday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ASPATRIA.—For building twenty workmen's dwellings at Outgang, for the Urban District Council:—

Building: Hill, Carlisle*	£4,881 0 0
Plumbing: Baty, Carlisle*	649 5 6
Joinery: Milburn, Keswick*	1,256 14 8
Slating: Hewitson, Carlisle*	311 14 6
Plastering: Nicholson, Wigton*	518 5 0
Painting: R. Carrick, Wigton*	117 8 9½

BRISTOL.—For alterations and additions at Southmead Infirmary, for the Bristol Board of Guardians:—

H. Pittard & Son*	£1,900

CHELTENHAM.—For new roof to St. Peter's Church. Mr. L. W. Barnard, F.R.I.B.A., architect, 31, Promenade, Cheltenham:—

Collin & Godfrey	£684	A. Wilson, Cheltenham*	£490
Billing	534		

CHESTER-LE-STREET.—For roadmaking, for the Chester-le-Street Joint Hospital Board:—

Executors of late M. Norman*	£403 10

DERBY.—Enlargement of Pear Tree Council School, for the Corporation:—

Siegwart Fireproof Floor Co.*	£629 10

EALING.—The Town Council have accepted the following tenders for making up private roads:—

H. Morecroft, for portion of Curzon-road	£349
Clements, Knowling, Elers-road	777
Clements, Knowling, Ealing Park-gardens	627
Clements, Knowling, Gumleigh-road	297
H. Morecroft, Hope-road	109

GLOSSOP.—For erection of a new nave and aisles at All Saints Parish Church. Messrs. C. & C. M. Hadfield, architects, Cairns-chambers, 19, St. James'-street, Sheffield. Quantities by Mr. L. A. Francis, 8, John-street, Adelphi, London, W.C.:—

R. Rathbone & Sons	£4,961 10 0	Dawson & Jones, Ltd.	£4,475 0 0
W. Moss & Sons, Ltd.	4,840 0 0	J. Eshelby & Son	4,430 0 0
Pask & Thorpe	4,779 0 0	J. Fidler, Ltd.	4,340 0 0
W. Howard & Son	4,731 0 0	Robinson & Sons	4,232 0 0
Middleton Bros.	4,716 6 9	Bridgeman & Sons, Lichfield*	3,927 0 0
S. Goddard	4,680 16 0		
Nicholson & Son, Ltd.	4,500 0 0		

GRIMSBY.—For construction of 2-ft. diameter sewer in Laceby-road. Mr. H. Gilbert Whyatt, M.Inst.C.E., Borough Engineer and Surveyor:—

Hewins & Goodhand	£495 10 0	Swaby & Walsham	£374 10 0
Wilkinson & Houghton	480 0 0	W. Kirton	366 8 9
J. H. Thompson & Sons, Ltd.	444 0 0	Z. G. Yewdall	362 16 5
		M. Holmes & Co.	350 15 3
		Taylor & Richardson, Grimsby*	344 8 0

HENDON.—For painting, distempering, and general repairs at the Infirmary, Colindale-avenue, Hendon, N.W., for the Guardians of the City of Westminster Mr. Edwin G. Hall, architect, 54, Bedford-square, W.C. Quantities by architect:—

J. Wright	£4,105 17 2
Warburton & Son	3,318 0 0
McCarthy, 155, King's-avenue, Clapham Park, S.W.*	3,223 0 0

IPSWICH.—Erection of administrative block, etc., at the Borough Isolation Hospital, for the Corporation:—

P. J. Turner*	£7,535

LONDON.—Rebuilding of Clerkenwell Fire Station, for the London County Council:—

J. Garrett & Son	£18,400	W. Akers & Co., Ltd.	£17,497
A. Monk	18,135	H. L. Holloway	16,359
C. P. Roberts & Co., Ltd.	17,836	W. E. Blake, Ltd., Stevenage-road, Fulham, S.W.*	16,353
Brand, Pettit, & Co.	17,593		

METROPOLITAN ASYLUMS BOARD. — The following tenders have been dealt with by the Metropolitan Asylums Board:—

Eastern Hospital—Erection of New Milk Store, etc.

J. & J. Dean	£410
W. S. Sharpin	350
L. Karak, Railway-place, Belvedere*	313

[Engineer-in-Chief's estimate, £305.]

Grove Hospital—Installation of Electric Lighting in Blocks 4 and 6.

F. M. Prockter & Co., Ltd.	£496 15 0
Toy & Winslow	470 0 0
A. Newman, Ltd.	460 0 0
Electrical Installations, Ltd.	447 0 0
C. H. Cathcart & Co.	445 0 0
A. E. G. Electric Co., Ltd.	441 2 0
Sherratt Bros.	392 12 6
J. & F. May	391 0 0
H. J. Godfrey	386 0 0
G. Weston & Sons, Ltd.	363 0 0
Ellis & Ward, Ltd.	360 0 0
Lund Bros. & Co.	350 0 0
Alpha Manufacturing Co., Harberson works, Harberson-road, Balham*	344 8 0

[Engineer-in-Chief's estimate, £400.]

South-Western Hospital—(a) *Provision of Engineer's Tools.*

W. Newbold & Co.	£247 0 0
Selson Engineering Co.	200 0 0
J. & F. May, 33, Whetstone-park, Lincoln's Inn-fields, W.C.*	179 0 0

[Engineer-in-Chief's estimate, £180.]

(b) *Extension of Engineer's Workshops.*

L. L. Leeder & Co.	£157 17 0
E. Wall, Alice Works, Summerstown, S.W.*	143 0 0

[Engineer-in-Chief's estimate, £115.]

Southern Hospital—(a) *Re-wiring Fire Alarms, etc.*

Sherratt Bros.	£1,300 5 0
C. H. Cathcart & Co.	1,070 0 0
G. Weston & Sons, Ltd.	1,020 0 0
A. V. Giffkins & Co.	960 5 6
Electrical Installations, Ltd.	790 0 0
A. Newman, Ltd.	732 0 0
Lund Bros. & Co.	720 0 0
J. & F. May, 33, Whetstone-park, Lincoln's Inn-fields, W.C.*	709 0 0

[Engineer-in-Chief's estimate, £657.]

(b) *Provision of New Sorting-Room.*

J. W. Ellingham	£338 0 0
R. Tonge	340 0 0
W. S Sharpin, Wellington Works, Wellington-road, Bow*	320 0 0

[Engineer-in-Chief's estimate, £335.]

MILE END.—Erection of Scattered Homes Laundry, for the Mile End Board of Guardians:—

W. Reason	£687	W. S. Sharpin, Wellington-road, Bow*	£580
Thomas & Edge	647		
J. Johnston	630		

MILE END.—Painting works at the Workhouse, for the Mile End Board of Guardians:—

W. Simms	£265 18	W. Bailey, Poulton-road, East Greenwich*	£195 0
J. W. Ryan	225 10	Finch & Co.	120 0
W. S. Sharpin	205 0		

NEWCASTLE-UNDER-LYNE.—Erection of three blocks of workmen's dwellings in Lower Green, for the Town Council:—

G. Rowe & Son* £4,353

RICHMOND-ON-THAMES.—For the paving with granite setts of St. Helena-terrace and wharf, for the Town Council:—

Fry Bros., Ltd.	£445 0 0	Wimpey & Co.	£399 5 0
E. J. Anderson	431 13 6	Brookes, Ltd.	396 10 0
Kavanagh & Co.	427 10 0	J. Mowlem & Co., Westminster*	387 1 0
E. Parry & Co.	424 10 0	Durax Dustless Roads, Ltd.	355 12 6
Griffiths & Co., Ltd.	416 15 0		
W. H. Wheeler & Co.	409 17 6		

[Borough Surveyor's estimate, £410.]

STAFFORD.—Installation of heating apparatus in the Assembly Rooms, for the Town Council:—

Rudge & Griffith* £236

STRATFORD.—For the erection of new warehouse to Messrs. T. H. Harris & Son's premises, Marsh Gate-lane, Stratford. Messrs. J. T. Newman & Jacques, architects, 2, Fen-court, London, E.C.:—

W. G. Larke & Sons	£1,596 0 0	J. & J. Dean	£1,340 0 0
R. M. Denman	1,491 10 0	W. J. Maddison	1,290 0 0
W. Gladding & Co.	1,399 0 0	A. E. Symes	1,264 0 0
		Clark & Sons, Cambridge*	1,245 13 0

WALTHAM.—Widening of Sewardstone-road, for the Urban District Council:—

Nobel's Explosives Co., Ltd.* £430

WARE.—Sewerage works in Musley Villas-road, for the Urban District Council:—

Pilgrim & Son, Whetstone* £173 11 6

WEST HAM.—For installing hot-water heating apparatus to Rosetta-road School, Custom House, for the Education Committee of the County Borough of West Ham. Mr. William Jacques, A.R.I.B.A., architect, 2, Fen-court, London, E.C.:—

W. J. Burroughes & Sons	£1,850 0 0	C. Dawson & Co.	£1,436 8 6
Beaven & Sons, Ltd.	1,819 15 0	J. & F. May	1,479 0 0
Wippell Bros. & Row	1,750 0 0	J. T. Halsey	1,464 0 0
H. J. Cash & Co., Ltd.	1,658 0 0	B. Parker, Ltd.	1,460 0 0
C. P. Kinnell & Co., Ltd.	1,595 0 0	J. Cormack & Sons, Ltd.	1,447 0 0
W. G. Cannon & Sons, Ltd.	1,590 0 0	W. Freer	1,428 0 0
Midland Heating and Ventilating Co., Ltd.	1,560 0 0	F. Davies	1,389 0 0
		F. M. Prockter & Co., Ltd.	1,243 17 6
		W. Watkin & Son, Wood Green‡	1,205 0 0

[‡ Recommended for acceptance.]

WOODFORD.—Street works, for the Urban District Council:—

W. & C. French* £1,054 0 3

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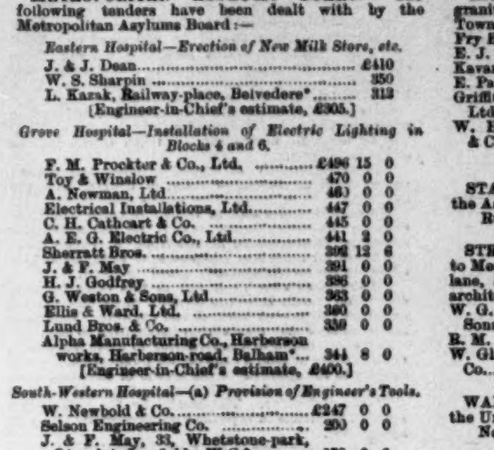

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